Government of Tamil Nadu
State Planning Commission

REPORT

2025

Evaluation of Naan Mudhalvan Scheme

EVALUATION OF NAAN MUDHALVAN SCHEME

Transforming Dreams into Reality through Skill Development and Support, Naan Mudhalvan Creates Leaders of a Brighter Tamil Nadu

State Planning Commission
Government of Tamil Nadu
2025

Published by

State Planning Commission
Government of Tamil Nadu
2025

Report Prepared by

Dr. M. Vijayabaskar
Member, State Planning Commission

Dr. K. Suresh Kumar
Head of the Department (i/c), Department of Humanities, PSG College of Technology, Coimbatore.

Dr. Shankar R
Assistant Professor (Senior Grade), Department of Humanities, PSG College of Technology, Coimbatore.

Mr. Yashwanth R
Assistant Professor (Senior Grade), Department of Humanities, PSG College of Technology, Coimbatore.

Mr. Andrew Sesuraj M
Public Policy Consultant, State Planning Commission

J. JEYARANJAN
Executive Vice Chairman

STATE PLANNING COMMISSION,
"EZHILAGAM",
CHEPAUKKAM, CHENNAI-600 005.

13.10.2025

Foreword

Tamil Nadu has always been at the forefront of visionary governance and inclusive human development. Guided by the Hon'ble Chief Minister's emphasis on equitable growth and human capital enhancement, the *Naan Mudhalvan Scheme* initiative stands as a landmark effort to equip our youth with the skills demanded by industries of tomorrow. Unprecedented in scale and scope, the initiative is rooted in the philosophy that guides Tamil Nadu's development journey- social justice, equality, and empowerment, ensuring *everything for everyone*. This principle has been the foundation of our State's sustained progress, where human development and economic growth advance hand in hand.

As the global economy transitions towards knowledge-driven and technology-intensive production, the Government of Tamil Nadu has taken deliberate and sustained measures to prepare its young population to thrive in the new generation industries ranging from artificial intelligence and electric mobility to advanced manufacturing and green technologies. The Faculty Development Programmes and structured learning initiatives under *the Naan Mudhalvan Scheme through exposure to industry practices reflect a forward-looking* model where academic institutions, industries, and government converge to create a future-ready workforce.

This study, commissioned to evaluate the outcomes of the *Naan Mudhalvan* Scheme, provides valuable insights into how training, mentoring, and institutional capacity-building are transforming higher education into a dynamic platform for employability and innovation. By ensuring that learning is both inclusive and industry-relevant, the scheme aligns strongly with the Sustainable Development Goals (SDGs), particularly the principle of "Leaving No One Behind" and "Quality Education."

Tamil Nadu's vision is clear: to achieve *everything for everyone* through sustained socio-economic progress rooted in skill, equity, and opportunity. Initiatives like *Naan Mudhalvan* embody this vision by empowering every young mind—urban or rural, privileged or first-generation learner—to contribute meaningfully to and participate in the State's development trajectory.

As we move towards the goal of a **One Trillion-Dollar Economy**, it is this collective investment in knowledge, skill, and human potential that will define Tamil Nadu's growth story—transforming aspirations into achievements, and ensuring that development remains both inclusive and sustainable.

Executive Vice-Chairman
State Planning Commission

Tel. No. : 044-2858 5705 Mobile No. 7305667776 e-mail id: vcspc@nic.in, vcspc2021@gmail.com

ACKNOWLEDGEMENT

We express our deep gratitude to Dr. J. Jeyaranjan, Executive Vice-Chairman, State Planning Commission, Government of Tamil Nadu, for entrusting us with this important study and for his continued guidance and encouragement throughout the process. His vision and leadership have been a source of constant inspiration in shaping this assessment.

Our sincere thanks to Dr. M. Vijayabaskar, Member, State Planning Commission, for his steadfast support and insightful suggestions that helped refine the direction and focus of this study. We also extend our heartfelt appreciation to Ms. Sudha S., I.F.S., Member-Secretary, State Planning Commission, for her facilitation, coordination, and unwavering support during all stages of the study.

We gratefully acknowledge the support of Ms. J. Innocent Divya, I.A.S., Commissioner, Directorate of Technical Education (Former MD, TNSDC), Mr. Kranthi Kumar Pati, I.A.S., Managing Director, Tamil Nadu Skill Development Corporation (TNSDC), and Ms. S. Santhi, Project Director (Technical Initiatives), and the Team of Naan Mudhalvan Scheme for their cooperation and assistance in executing the assessment and ensuring its timely completion. Our sincere thanks are also due to Mr. S. Mithun Ratnakar, IP&TAFS, the Former Head, Plan Coordination Division, SPC and Present Head and Team of Plan Coordination Division, for their meticulous support and guidance in driving the scheduled plans and ensuring seamless coordination.

We place on record our special thanks to Dr.K.Prakasan, Principal, PSG College of Technology, Coimbatore, Dr. K. Suresh Kumar, Head of the Department (i/c), Department of Humanities, and his team members including Dr. Shankar R., Assistant Professor (Senior Grade), and Mr. Yashwanth R., Assistant Professor (Senior Grade), for their field visits, institutional interactions, and comprehensive data consolidation across the sampled institutions.

We acknowledge the contribution of Mr. Andrew Sesuraj M., Public Policy Consultant, Ms. M. Shanmugapriya, Research Assistant, and all members of the study team for their commitment, analytical inputs, and sustained support in completing this evaluation. Special recognition is extended to the Principals and Faculty Coordinators of the institutions that participated in the study for their exemplary coordination, which greatly facilitated the process.

Finally, we convey our heartfelt thanks to the diverse stakeholders of Naan Mudhalvan Scheme for their significant contributions and unwavering commitment to the study’s execution.

EXECUTIVE SUMMARY

The evaluation study of the Naan Mudhalvan Scheme assesses its effectiveness in enhancing the skills and employability of Engineering and Polytechnic students. It measures the stakeholders' perception of the scheme both quantitatively and qualitatively, identifies gaps and opportunities to grow, and documents best practices to inform design modifications and optimize efficacy. The sample design targets high-enrollment courses in Civil, Mechanical, Electronics, Electrical, and Computer Science disciplines across 55 Engineering and 72 Polytechnic colleges in 19 districts, engaging 3,950 and 5,059 student respondents, respectively, ensuring geographic and demographic diversity. Interviews were also conducted with other key stakeholders, including the Single Point of Contacts (SPOC) from Institutions, Training Partners, and Employers. This comprehensive evaluation provides actionable insights to strengthen the scheme's role in building a globally competitive and inclusive workforce.

The key findings of the evaluation are;

1. **Enhanced Employability Confidence**: The Naan Mudhalvan Scheme's courses, both Common Skilling and Domain Specific Courses of Engineering and Polytechnic, have significantly boosted student confidence, with 76% of engineering and 81% of polytechnic students across Tamil Nadu reporting improved job prospects, equipping them with practical skills for diverse career paths, especially in rural areas.
2. **Industry-Aligned Certifications**: The scheme's formal certification process for its courses has empowered students by enhancing their professional portfolios, with 61% of engineering and 71% of polytechnic students earning digital certificates that increase their visibility on job portals and professional social networking platforms like LinkedIn, particularly benefiting first-generation and rural students.
3. **Improved Placement Readiness**: Courses under the Naan Mudhalvan Scheme have significantly enhanced placement preparedness, with 79% of engineering and 83% of polytechnic students reporting improved employability prospects, driven by practical modules and resume-building exercises that align with industry expectations.
4. **Tangible Internship and Placement Outcomes**: The scheme's job-oriented curriculum, including hands-on training, has facilitated meaningful career opportunities among the polytechnic and engineering students, who have secured internships and placements in MSMEs and tech firms.
5. **Equitable Skill Development across Regions**: By integrating courses with academic schedules and focusing on industry-relevant skills, the scheme has

fostered equitable skill development state-wide, noting enhanced career readiness, ensuring broad applicability for diverse communities, including tribal and female students. This is especially true of students in industrially backward regions, where it is difficult for students to get introduced to industry practices.

Amidst the above virtues of the scheme in enhancing the efficiency of the students, the following operational challenges also prevails that need to be addressed:

1. **Hub Institution Challenges**: When institutions lack the minimum 60-student enrollment, students must travel to hub institutions, facing logistical issues like inadequate transportation, increased costs, and fatigue, particularly affecting rural and female students need to be addressed. The capacity of the Host Institutions, with sufficient classrooms, labs, or digital resources, needs to be adequately considered in order to avoid compromising the learning experience.
2. **Trainers' Skills**: In certain rural institutions, trainers may benefit from additional support and capacity-building to strengthen delivery quality. Enhancing trainers' expertise, particularly in technical courses critical for industry-relevant skills, will help ensure consistent and high-quality learning outcomes across all regions as the scheme continues to expand across Tamil Nadu.
3. **Web Portal and Data Connectivity Issues**: The Naan Mudhalvan Scheme's web portal has become an essential platform for managing courses and certifications. However, enhancing its usability remains important, particularly for students in rural areas who face challenges with digital literacy and data connectivity. Streamlining certificate downloads and improving user navigation will help ensure that student' achievements are fully recognized and accessible, thereby reinforcing the impact of the scheme.
4. **Scheduling Difficulties:** Effective scheduling and timely communication are essential for the smooth delivery of lab-based sessions. In some cases, inconsistencies in planning have led to delays or cancellations, which impact collaboration with training partners and limit student participation. Strengthening coordination mechanisms between institutions and partners will help improve course completion rates and advance the scheme's goal of seamless, inclusive skill development.

The following are the key recommendations based on the evaluation,

1. **Strengthen Trainer Capacity and Course Delivery:** To improve teaching quality, a state-wide trainer upskilling program may offer hybrid certification courses in advanced fields, partnered with global tech firms. A standardized pacing

framework, supported by workshops on adaptive teaching, may cater to the diverse learning needs of rural and first-generation learners.

2. **Improve Digital Infrastructure and Connectivity:** To bridge the digital divide in rural and Tier II/III areas, the scheme may partner with telecom providers to deploy adequate IT infrastructure and high-speed internet. State-of-the-art digital labs equipped with modern computers and course-specific software may ensure seamless access to online learning platforms. This upgrade will enhance course effectiveness, reduce dropout risks, and empower rural students to compete in professional fields.
3. **Enhance Practical Training and Resource Access**: To address limited hands-on practice, the scheme may establish labs with industry-standard tools in rural and tribal areas through partnerships with industry for software and hardware. Regional Centres of Excellence (CoEs) in Tier II/III cities may be established to provide access to specialized tools, minimising resource constraints. Subsidies for devices and internet packages to economically disadvantaged students, supported by NGOs and corporate sponsors, will help mitigate the financial issues that prevent students from accessing the scheme to its full potential.
4. **Optimize Coordination and Scheduling**: A cloud-based scheduling platform, integrated with institutional academic calendars, will streamline training session planning and prevent delays. Regional coordination hubs and a digital dashboard will facilitate real-time communication between institutions and training partners, enhancing transparency.
5. **Industry 4.0 centres:** The Industry 4.0 centres set up in the ITI's across the state can be leveraged for accessing the state-of-the-art technical infrastructure required for equipping the students under the scheme.
6. **Use of Artificial Intelligence:** The students with poor access as well as learning capacities can be supported with the deployment of AI to make in-person classes more effective.

With the scheme's growing prominence, it is set to empower a diverse and skilled workforce, fostering innovation and productivity across Tamil Nadu's major industries, and positioning the state as a global frontrunner in skill development and inclusive economic growth. This alignment with technological advancement and equitable growth will serve as a cornerstone in realising Tamil Nadu's ambitious goal of achieving a one trillion-dollar economy by 2030-31, transforming communities through education and opportunity.

PREAMBLE OF THE STUDY

The Naan Mudhalvan Scheme is a landmark initiative by the Government of Tamil Nadu aimed at equipping students with essential skills to bridge the gap between academic learning and industry demands. This scheme reflects the state's commitment in building a highly skilled workforce, capable of addressing both current and future employment requirements of the industry. Recognizing the fact that the technological advancements and globalisation have intensified competition for quality jobs, the scheme was established to ensure that students from Engineering, Polytechnic, and Arts and Science streams gain practical, market-relevant skills that enhance their employability. By focusing on core competencies, emerging technologies, and domain-specific skills, the Naan Mudhalvan Scheme supports a more holistic approach to education, ensuring that students in Tamil Nadu are better prepared to contribute effectively within their chosen professions and to the broader economy.

The Naan Mudhalvan Scheme is facilitated by the Tamil Nadu Skill Development Corporation (TNSDC) under the Special Programmes Initiatives Department of the Government of Tamil Nadu. Through the programme, more than 2,200 institutions, including students from Engineering, Polytechnic, Arts and Science institutions have participated. The Scheme offers more than 700 courses across 20 sectors, including Healthcare and IT, in collaboration with over 200 industry partners, impacting more than 2.7 million students as of March 2025. While initial outcomes demonstrate success, the present evaluation is essential to assess long-term efficacy, identify and address the gaps, and ensure alignment with evolving workforce demands, thereby providing a scalable model for sustainable skill development.

This study specifically examines the scheme’s impact on students enrolled in Engineering and Polytechnic institutions throughout Tamil Nadu, evaluating its success in enhancing employability and technical proficiency through comprehensive data collection from key stakeholders, including Students, Single Point of Contacts (SPOCs) from Institutions, Training Partners and Employers, both quantitatively and qualitatively. The insights derived from this assessment will help in identifying the scheme’s strengths and areas for improvement, contributing to ongoing efforts in educational reform and the enhancement of skill development policies at both state and national levels.

CONTENTS	PAGE. NO.

Preamble	
1. Naan Mudhalvan Scheme – An Overview	1
2. Objectives of the Study	5
3. Methodology	5
4. Evaluation of the Scheme: Stakeholders' Perspective	14
5. Major Findings of the Evaluation	67
6. Operational Challenges	70
7. Recommendations of the Evaluation	73
8. Conclusion	76
References	78
Appendices	
1: Work Plan	*79*
2: List of Sample Engineering Institutions	*80*
3: List of Sample Polytechnic Institutions	*82*
4: Personal Information of Sample Students	*84*
5: National Skill Development Initiatives	*86*
6: International Skill Development Initiatives	*89*

LIST OF TABLES

3.1 Common Skilling – English and Microsoft Essential Courses –Engineering and Polytechnic Domain
3.2 Select Courses and Branch – Engineering Domain
3.3 Select Courses and Branch – Polytechnic Domain
3.4 Total Population – Student Beneficiaries of Engineering and Polytechnic Institutions
3.5 Sample Respondents
3.6 Zones and Sample Districts
3.7 Zone-wise Sample Respondents – Engineering
3.8 Community-wise sample Respondents among the zones - Engineering
3.9 Zone-wise Sample Respondents – Polytechnic
3.10 Community-wise sample Respondents among the zones - Polytechnic
4.1 Perception of Students - English
4.2 Perception of Students – Microsoft Essentials
4.3 Perception of Students - Structural Design, Modelling and Detailing
4.4 Perception of Students - Electric Vehicle Technology and Manufacturing
4.5 Perception of Students - Networking Essentials
4.6 Perception of Students - EV Design
4.7 Perception of Students - Full Stack Development with JAVA
4.8 Perception of Students - Building Information Modelling
4.9 Perception of Students - Industry 4.0
4.10 Perception of Students - PCB Design
4.11 Perception of Students - Internet of Things
4.12 Perception of Students - Industrial Meta-verse using AR and VR
4.13 Perception of Students -Perception on Employability Prospects
4.14 Perception of Students -Certification and Recognition upon Course Completion
4.15 Perception of Students - Perceived Improvement in Placement Opportunities
4.16 Perception of Students - Placement and Internship Outcomes through the Scheme

1. NAAN MUDHALVAN SCHEME – AN OVERVIEW

The Naan Mudhalvan Scheme, a flagship program of the Government of Tamil Nadu, is implemented with the primary objective of equipping students with essential skills to bridge the gap between academic learning and industry requirements. Launched in 2022, the initiative underscores the state's strategic commitment to cultivating a future-ready workforce capable of addressing the evolving challenges of the global labour market. In response to the growing influence of technological advancements and globalisation, the scheme ensures students enrolled in engineering and polytechnic institutions acquire industry-relevant, practical competencies that significantly enhance their employability. By emphasising core technical skills, emerging technologies, and domain-specific expertise, the Naan Mudhalvan Scheme adopts a holistic approach to education that aligns with modern workforce expectations.

The initiative is specifically tailored for students and faculty in higher education, targeting the student segment of Tamil Nadu and preparing them to enter high-demand sectors such as Information Technology, Engineering, and Manufacturing. Recognizing the importance of practical exposure, the program promotes hands-on learning, industry-oriented training modules, and collaborative learning experiences that facilitate a seamless transition from academic settings to professional environments. Ultimately, the scheme not only empowers students with technical expertise but also supports Tamil Nadu's growing reputation as a hub for skilled technical talent in India.

As of March 2025, the Naan Mudhalvan Scheme reached more than 2.7 million students across the state, making it one of the most significant skill development initiatives in the country. To address diverse learning needs and to align with evolving industry standards, the curriculum is designed to be adaptive and integrative. The course has been incorporated with digital learning platforms, industry expert-led sessions, and practical workshops to offer a comprehensive and immersive learning experience. The program covers a wide array of technical subjects, including artificial intelligence, machine learning, data science, and other emerging fields, while placing strong emphasis on soft skills such as communication, teamwork, and leadership. This integrated approach ensures that graduates emerge as professionals, capable of thriving in multidisciplinary and multicultural work environments.

Given its scale and impact, the Naan Mudhalvan Scheme has attracted significant attention from Policymakers, Educational Institutions, and Industry Stakeholders who view it as a potential model for large-scale skill development. Its collaborative framework, incorporating partnerships with technology firms, manufacturing companies and academic experts, enables the application of acquired skills in real-world contexts. As the

initiative continues to expand, it is poised to play a transformative role in shaping educational practices and workforce development strategies not only within Tamil Nadu but across India. By aligning educational outcomes with workforce market demands, the scheme offers a sustainable and replicable model for empowering the next generation of skilled professionals.

OBJECTIVES OF THE SCHEME

The primary objective of the Naan Mudhalvan Scheme is to nurture students in higher educational institutions and equip them with industry-relevant skills. It aims to:

- **Enhance Employability**: Equip students across Tamil Nadu's educational institutions with industry-relevant skills and competencies, enabling them to secure employment opportunities aligned with their chosen career pathways.
- **Bridge Industry Skill Gaps**: Identify and collaborate with high-calibre training providers to deliver targeted skill development programs to students that address current industry needs, ensuring alignment with evolving market demands.
- **Enhance the Competence of Faculty**: Improve the competence of the faculty so that the internal resources of the institutions are strengthened and the need for additional training are eliminated after the initial skill upgradation trainings for a few years
- **Provide Comprehensive Guidance**: Offer robust academic and career guidance to students, fostering informed decision-making and supporting their pursuit of professional and personal aspirations.
- **Promote Sustainable Skill Development**: Integrate multi-departmental efforts and public-private partnerships to create a scalable, synergistic ecosystem that supports continuous learning, sustainable livelihoods, and responsiveness to global enterprise trends.
- **Foster Diverse Career Pathways**: Facilitate access to over 300 career pathways through a network of 2,000+ institutions, empowering students to explore and excel in their fields of interest.

TARGET BENEFICIARIES

The scheme targets a wide range of beneficiaries that include:

- Students and Faculty from Government Universities, Government Institutions, Government Aided Institutions and Private Institutions aiming to equip with skills to access job markets.
- Young innovators and aspiring entrepreneurs seeking skill-based support.

NAAN MUDHALVAN: A GLOBAL MODEL FOR INCLUSIVE, INDUSTRY-ALIGNED SKILL DEVELOPMENT

The Naan Mudhalvan Scheme redefines skill development by integrating mandatory, curriculum-based training with a focus on inclusivity, mentorship, and global competitiveness. Targeting a million students annually, the scheme offers a diverse portfolio encompassing emerging technologies, soft skills, and placement opportunities. Unlike regional skill development programs in India, such as Gujarat or Rajasthan, which focus on sector-specific skills like textiles or mining, Naan Mudhalvan adopts a holistic approach, blending industry-aligned training with centralised coordination and gender-sensitive pedagogy. This ensures equitable access for rural, female, and marginalized learners and reduces socio-economic disparities. Programs in Kerala and Odisha focus on emerging technologies like AI and robotics yet lack the level of curriculum integration or women-specific initiatives that Naan Mudhalvan prioritizes, ensuring equitable access for diverse learners, including rural and female students. While states like Andhra Pradesh and Karnataka emphasize cutting-edge fields such as IoT, cyber-security, and data analytics, Tamil Nadu's scheme excels in its scalable, inclusive framework, blending soft skills, sector-specific training, and innovative pedagogies (Appendix 5).

Compared to international benchmarks, Naan Mudhalvan Scheme surpasses programmes like Germany's Dual Vocational Training or France's Alternance by embedding mandatory academic integration and a broader course scope, fostering both regional relevance and global employability. While Japan and Ireland emphasize future-ready skills like data analytics, and Denmark and Finland prioritize sustainability, Tamil Nadu's scheme excels in scalability and innovation through industry partnerships with global firms like Microsoft and pedagogical tools like AR/VR and virtual labs. Its mentorship-driven model and focus on women-specific initiatives set it apart from Australia, the UK, and Sweden's vocational programs, positioning Naan Mudhalvan as a global exemplar. By driving social mobility, regional economic balance, and a workforce ready for the Fourth Industrial Revolution, the scheme offers a scalable, inclusive framework for transformative skill development worldwide (Appendix 6).

NAAN MUDHALVAN: POWERING TAMIL NADU'S TRILLION-DOLLAR ECONOMY VISION WITH GLOBAL SKILL STANDARDS

The Naan Mudhalvan Scheme, launched by the Tamil Nadu government, is a transformative initiative driving the state's vision of achieving a one trillion-dollar economy by 2030-31. By equipping over one million students annually with industry-relevant skills in IT, manufacturing, and green energy through project-based learning, the scheme mirrors and excels various global skill development initiatives. Strategic partnerships with State Industries Promotion Corporation of Tamil Nadu (SIPCOT) and Small Industries Development Corporation (SIDCO) to align training with regional industrial demands, the scheme reduces employer onboarding costs by up to 20% and supporting the 14–15% GDP growth required for the trillion-dollar target. Its inclusive framework, incorporating subsidised training, multilingual resources, and gender-responsive pedagogy, empowers rural, tribal and female learners. With Tamil Nadu accounting for 43% of India's total female factory workforce, the scheme reduces socio-economic inequalities and urban-rural migration, promoting social mobility and equitable economic participation.

The scheme catalyses innovation and global competitiveness through entrepreneurial modules, hackathons, and digital skills training, fuelling Tamil Nadu's over 5,000 startups. By generating employment in Tier II and III cities, it promotes decentralized development, ensuring regional economic balance. Emphasis on emerging technologies and green energy prepares students for sustainable industries, attracting FDI that contributes to Tamil Nadu's GDP. Continuous feedback mechanisms and Faculty Development Programs (FDPs) enhance educational excellence, positioning Tamil Nadu as a global talent hub integrated into international supply chains. By fostering a skilled, inclusive, and innovative workforce, Naan Mudhalvan Scheme drives industrial growth, equitable development, and sustainability, cementing Tamil Nadu's trajectory toward a trillion-dollar economy by 2030-31.

2. OBJECTIVES OF THE STUDY

The Evaluation of Naan Mudhalvan Scheme focuses on measuring the outcome and impact of the scheme that augments the initiatives to achieve the vision of economic development of the state. The study will identify the potential opportunities in the implementation of the scheme.

The study will focus on the following objectives:

- Assessing the impact of the scheme in enhancing the skills and employability of students in the Engineering and Polytechnic streams.
- To assess the impact of the scheme on the recruitment and placement of students belonging to the Engineering and Polytechnic streams.
- Identifying possible gaps in the implementation of the scheme to recommend course corrections.
- Understanding the long-term impact of the scheme in achieving the state's vision of a one trillion-dollar economy.
- Documenting lessons learnt, best practices, and areas for further refinement or expansion.
- To capture the perception regarding the process to improve the efficacy of the scheme.
- To inform any modifications in the design and implementation, mechanisms to institutionalize the course curriculum and strategies to improve the impact of the scheme further.

3. METHODOLOGY

The impact assessment has been carried out exclusively for the Engineering and Polytechnic Institutions across the state of Tamil Nadu. The study has been carried out with a systematic approach with appropriate samples to ensure the reliability and validity of the findings.

The study employed both quantitative and qualitative methods to gather meaningful insights from a diverse student population across Engineering and Polytechnic institutions, and perspectives of the other stakeholders of the scheme.

The study was conducted using the following methodology:

- **Stakeholder Consultations:** The stakeholders (Students, Single Point of Contact from the Sample Institutions, Training Partners and Employers) were sensitized and consulted through Key Informant Interviews (KIIs) and Focus Group Discussions (FGDs) to gather diverse perspectives.
- **Surveys:** Customised online surveys have been administered to students to capture their experiences, challenges, and aspirations. The process had begun with a pilot study to ensure the feasibility, validity, and reliability of the survey instrument.
- **Case Studies:** Success stories have been documented to highlight the tangible impacts of the scheme on individual trajectories.

SAMPLE DESIGN

The current study is intended to evaluate the Naan Mudhalvan Scheme among the Engineering and Polytechnic students across the state adopting stratified random sampling technique.

The evaluation process consisted of two components:

- Evaluating Common Skilling programmes – English and Microsoft Essential courses
- Evaluating Domain Specific Courses - Engineering and Polytechnic

Table 3.1 refers to the common skilling courses that have been offered for all the branches of Engineering and Polytechnic institutions.

Table 3.1: Common Skilling – English and Microsoft Essential Courses – Engineering and Polytechnic Domain

S. No	Domain	Course Name	Semester
1	Engineering	English and Microsoft Essentials	1st Year Even & 2nd Year Odd respectively
2	Polytechnic	English and Microsoft Essentials	1st Year Even & 2nd Year Odd respectively

The following Tables 3.2 and 3.3 refer to the select courses and branches among the Engineering and Polytechnic domains that have been considered for the study.

Table 3.2: Select Courses and Branch – Engineering Domain

S. No	Branch	Course Name	Semester
1	Civil Engineering	Structural Design, Modelling and Detailing	(2024-25) ODD
2	Mechanical Engineering	Electric Vehicle Technology and Manufacturing	(2023-24) EVEN
3	Electronics & Communication Engineering	Networking Essentials	(2022 -23) EVEN (2023-24) ODD
4	Electrical & Electronics Engineering	EV Design	(2022 -23) EVEN (2023-24) EVEN
5	Computer Science & Engineering / Information Technology	Full Stack Development with JAVA	(2023-24)ODD (2024-25) ODD

Table 3.3: Select Courses and Branch – Polytechnic Domain

S. No	Branch	Course Name	Semester
1	Civil Engineering	Building Information Modelling	(2024-2025) ODD
2	Mechanical Engineering	Industry 4.0	(2024-2025) ODD
3	Electronics & Communication Engineering	PCB Design	(2024-2025) ODD
4	Electrical & Electronics Engineering	Internet of Things	(2024-2025) ODD
5	Computer Science & Engineering / Information Technology	Industrial Meta-verse using AR and VR	(2024-2025) ODD

The courses listed in Tables 3.2 and 3.3 were selected as representative course samples from the Engineering and Polytechnic disciplines based on the following criteria:

- The course must be offered to students enrolled in the following branches (for both Engineering and Polytechnic disciplines):
    - Civil Engineering
    - Electrical and Electronics Engineering
    - Electronics and Communication Engineering
    - Mechanical Engineering and
    - Computer Science Engineering/Information Technology
- The course must have the highest enrolment among all courses offered within the respective branches during the academic years 2022–2023, 2023–2024, and 2024–2025 (up to the Odd Semester).

Based on the above criteria, student data for engineering institutions in 36 districts, excluding Pudukkottai and The Nilgiris, and student data for Polytechnic institutions in all 38 districts have been sourced from the Tamil Nadu Skill Development Corporation (TNSDC), Government of Tamil Nadu.

Table 3.4 presents the above-mentioned details.

Table 3.4: Total Population – Student Beneficiaries of Engineering and Polytechnic Institutions

Discipline	No. of Districts	No. of Institutions	No. of Students
Engineering	36	152	179123
Polytechnic	38	138	188562

Table 3.5b presents the sample details about the number of districts, institutions, and respondents selected for the study based on the following criteria (for both Engineering and Polytechnic disciplines):

- The selected institutions that offer the sample courses for the specified branches listed in Tables 3.2 and 3.3.
- The students included in the study should have completed the course and continued in the institution, studying in their third or final year.
- The select institutions must be geographically distributed across the East, West, North, and South Zones of the state.

- The selection of location/district to maintain a balance across Tier 1, Tier 2, and Tier 3 cities.
- Equal consideration must be given to institutions located in both rural and urban areas.

Table 3.5: Sample Respondents

Discipline	No. of Districts	No. of Institutions	No. of Students
Engineering	17	55	3950
Polytechnic	18	72	5059

The data collection for the study was conducted between December 2024 and May 2025. The Table 3.6 presents the districts covered by the study and its corresponding zones of the study. The table outlines the geographical distribution of districts across four zones in Tamil Nadu, where the study on engineering and polytechnic courses was conducted. Covering 19 districts across both polytechnic and engineering programmes ensures a robust sample size, reflecting a wide range of socio-economic, geographic, and educational contexts.

Table 3.6: Zones and Sample Districts

Zone	Districts Covered
East	Trichy, Karur, Ariyalur and Thanjavur
West	Coimbatore, The Nilgiris (Polytechnic only), Salem, Dharmapuri and Krishnagiri
North	Tiruvallur, Chennai (polytechnic only), Tirupattur and Villupuram
South	Madurai, Sivagangai, Theni, Tirunelveli, Thoothukudi and Kanniyakumari (Engineering Only)
Total Districts Covered for the study	**19 (Polytechnic and Engineering)**

Zonal Structure and Coverage: The study categorized Tamil Nadu into four zones—East, West, North, and south—each encompassing specific districts. This zoning likely ensures a balanced representation of urban, semi-urban, rural, and tribal areas, allowing for a comprehensive analysis of course impact across diverse demographics. A total of 19 districts are covered, combining both polytechnic and engineering programmes, indicating a broad scope to capture varied educational and socio-economic contexts (Appendix 4).

East Zone (Trichy, Karur, Ariyalur, Thanjavur): This zone includes four districts known for their mix of urban (Trichy) and rural (Ariyalur, Thanjavur) areas, with Karur having a blend of both.

West Zone (Coimbatore, The Nilgiris, Salem, Dharmapuri, Krishnagiri): The West Zone covers five districts, with The Nilgiris included only for polytechnic courses.

North Zone (Tiruvallur, Chennai, Tirupattur, Villupuram): This zone includes four districts, with Chennai covered only for polytechnic courses alongside Tirupattur, Tiruvallur and Villupuram.

South Zone (Madurai, Sivagangai, Theni, Tirunelveli, Thoothukudi, Kanniyakumari): The South Zone covers six districts, with Kanniyakumari included only for engineering courses with Madurai, Sivagangai, Theni, Thoothukudi, and Tirunelveli.

Table 3.7: Zone-wise Sample Respondents – Engineering

Zone	Districts	Institutions	Students
East	4	11	1526
West	4	14	724
North	3	8	536
South	6	22	1164
Total	17	55	3950

Table 3.7 provides a zone-wise breakdown of sample respondents for engineering courses across Tamil Nadu, covering 3,950 students from 55 institutions representing 17 districts (Appendix 2 & 4).

The East zone, comprising 4 districts (Trichy, Karur, Ariyalur, and Thanjavur), has the highest student participation at 1,526 across 11 institutions. The West zone (Coimbatore, Salem, Dharmapuri, and Krishnagiri), with 4 districts and 14 institutions, has 724 students.

The North zone, covering 3 districts (Tiruvallur, Tirupattur, Villupuram) and 8 institutions with 536 students. The South zone spans 6 districts (Madurai, Sivagangai, Theni, Tirunelveli, Thoothukudi, and Kanniyakumari) and 22 institutions with 1,164 students.

The distribution highlights a focus on inclusivity across urban, semi-urban, and rural regions, with varying sample sizes reflecting regional differences in educational access and infrastructure, providing a comprehensive dataset for analysing course effectiveness.

Table 3.8: Community-wise sample Respondents among the zones - Engineering

Zone	Community					Total
	BC	MBC	Others	SC	ST	
East	667	560	55	238	6	1526
West	242	313	14	128	27	724
North	211	233	25	64	3	536
South	759	181	55	168	1	1164
Total	1879	1287	149	598	37	3950

Table 3.8 presents the community-wise distribution of 3,950 engineering student respondents across four zones in Tamil Nadu, categorised by Backward Class (BC), Most Backward Class (MBC), Scheduled Caste (SC), Scheduled Tribe (ST), and Others. Across the zones, BC (1,879) and MBC (1,287) communities constitute the majority of the sample (78%), while SC (598) and ST (37) represent 16% and 1%, respectively, highlighting a focus on marginalized groups, particularly SC. The “Others” category (149), representing 4% of the overall assessed students, includes other communities (Appendix 4).

Table 3.9: Zone-wise Sample Respondents – Polytechnic

Zone	Districts	Institutions	Students
East	4	16	396
West	5	24	1511
North	4	15	2260
South	5	17	892
Total	18	72	5059

Table 3.9 presents a zone-wise distribution of sample respondents for polytechnic courses across Tamil Nadu, comprising 5,059 students from 72 institutions representing 18 districts (Appendix 3 & 4).

The North zone, covering 4 districts (Tiruvallur, Chennai, Tirupattur, and Villupuram), has the highest student participation, with 2,260 students across 15 institutions.

The West zone, spanning 5 districts (Coimbatore, The Nilgiris, Salem, Dharmapuri, and Krishnagiri) and 24 institutions, follows with 1,511 students.

The South zone, with 5 districts (Madurai, Sivagangai, Theni, Tirunelveli, and Thoothukudi) and 17 institutions, has 892 students.

The East zone, covering 4 districts (Trichy, Karur, Ariyalur, and Thanjavur) and 16 institutions, has the smallest sample with 396 students.

The distribution underscores a comprehensive study scope, capturing diverse geographic and socio-economic contexts, with higher student numbers in zones with urban centres (North, West) and a focus on inclusivity for rural and tribal communities, providing a robust dataset for evaluating polytechnic course effectiveness.

Table 3.10 Community-wise sample Respondents among the zones - Polytechnic

Zone	Community					Total
	BC	MBC	Others	SC	ST	
East	161	128	15	85	7	396
West	509	748	47	184	23	1511
North	927	683	96	521	33	2260
South	469	226	51	146	0	892
Total	2066	1785	209	936	63	5059

Table 3.10 illustrates the community-wise distribution of 5,059 polytechnic student respondents across four zones in Tamil Nadu, categorised into Backward Class (BC), Most Backward Class (MBC), Scheduled Caste (SC), Scheduled Tribe (ST), and Others. Across the zones, BC (2,066) and MBC (1,785) account for 76% of the sample, while SC (936) and ST (63) contribute 18.5% and 1.2%, respectively, showing a focus on marginalized communities. The “Others” category (209) is 4% of the total respondents.

This distribution in Engineering and Polytechnic institutions highlights the study’s emphasis on inclusivity across urban, rural, and tribal populations, with regional variations aligning with local demographic and educational profiles.

4. EVALUATION OF THE SCHEME: STAKEHOLDERS' PERSPECTIVE

The Evaluation of the Naan Mudhalvan Scheme among Engineering and Polytechnic students in Tamil Nadu aims to understand its alignment with industry needs and its effectiveness in enhancing employability. This impact assessment process evaluates the outcome of the scheme in equipping students with market-driven competencies essential for professional success. By systematically evaluating the scheme, stakeholders can identify its strengths and pinpoint areas for improvement, ensuring sustained relevance. The feedback from students and other stakeholders provides insights into necessary refinements to course content and delivery, optimizing educational outcomes. Ultimately, this evaluation supports Tamil Nadu's vision of fostering a skilled workforce, empowering students to meet global industry demands and driving socio-economic growth.

The evaluation component of the study considers the following key aspects:

- Usefulness of the courses for career advancement
- Relevance of session outputs
- Value of the learning materials provided
- Effectiveness of the trainer
- Mode and relevance of the training sessions
- Timing of the training and its appropriateness
- Impact of the faculty development programmes

PERCEPTION OF STUDENTS

The perception of students was analysed using the data collected through the questionnaire exclusively about the sample courses and FGDs conducted with the students from all the sample institutions under three heads:

- Perception towards Common Skilling Courses - English and Microsoft Essentials
- Perception towards Domain Specific Courses
- Perception towards the Prospects of the Scheme

EVALUATING THE COMMON SKILLING PROGRAMMES – ENGLISH AND MICROSOFT ESSENTIAL COURSES

The English and Microsoft Essential Courses are designed to empower students to enhance basic communication and digital skills, preparing them for academic and professional success. The English course strengthens speaking, listening, reading, and

writing through practical exercises and role-plays that build confidence among students. On the other hand, Microsoft Essentials equips students with digital literacy, covering productivity tools, data handling, and basic computing for modern workplaces. Together, these two courses complement each other in enhancing employability by fostering effective communication and technical proficiency. Tamil Nadu, known as a hub for numerous diverse industries, including global companies and noted for its industrial development, has recognized the importance of these courses as a foundation for enhancing the skills of the students. The introduction of courses from the first year of education to equip students with knowledge and skills has benefited them in both their future academic pursuits and professional preparedness.

The percentage of satisfaction level of the students has been mentioned as the average of Met Expectations and Exceeds Expectations of Engineering and Polytechnic students together for the Common Skilling Courses - English and Microsoft Essentials.

COMMON SKILLING COURSE – ENGLISH

The English course under the Naan Mudhalvan Scheme is designed to empower the students by enhancing their communication skills for academic and professional success. Covering 60 hours of training and the contents developed by Cambridge English and STEP – The Hindu, the course ultimately prepares the students to communicate effectively in real-world situations and excel in corporate environments with strong communication skills.

Outcome and impact

The English course has made a real difference in the lives of students, helping them build essential skills for their professional journey. Most of the students found the course impactful, and 54% of students said that the course was beyond expectations, while another 42% noted that it met expectations. The positive response has shown that the course has strengthened their confidence, especially in placement preparation.

Table 4.1: Perception of Students – English

Category		English (%)		Average % of Satisfaction
		Engineering	Polytechnic	
Usefulness of the course	Didn't meet expectations	4	5	96
	Exceeds expectations	53	55	

	Met expectations	43	40	
Usefulness of the session inputs	Didn't meet expectations	3	5	96
	Exceeds expectations	49	55	
	Met expectations	48	40	
Value of the learning material provided	Didn't meet expectations	5	6	95
	Exceeds expectations	49	51	
	Met expectations	46	43	
Efficiency of the trainer	Didn't meet expectations	4	5	96
	Exceeds expectations	49	51	
	Met expectations	47	44	
Mode of the session and its Relevance	Didn't meet expectations	3	6	96
	Exceeds expectations	50	50	
	Met expectations	47	44	
Timing of the session and its Appropriateness	Didn’t meet expectations	2	4	97
	Exceeds expectations	51	54	
	Met expectations	47	42	

Source: Field Survey – 2024-2025

A first-generation learner from the Ariyalur district (East Zone), claimed, “As a first-generation learner, learning a second language was initially very challenging. However, the Naan Mudhalvan Scheme made it significantly easier. Through focused training, my verbal and written communication skills improved, and this has boosted my confidence to navigate urban and corporate environments more effectively.”

The structured approach of the course equips students to navigate competitive job markets effectively. The course's focus on practical communication skills ensures that students are well-prepared for a wide range of professional challenges. By fostering confidence and readiness, it bridges the employability gaps for students.

Building on a strong foundation, the session content is meticulously designed to meet industry demands, making it highly relevant for students. Notably, 50% of students rated the sessions as exceeding their expectations, while 45% confirmed they met expectations.

"I had language barriers in the initial days, but through the English course offered under Naan Mudhalvan, I gained significant improvement in grammar and speaking skills. This advancement enhanced my confidence, preparing me to pursue opportunities beyond my village and to compete effectively in both academic and professional environments."

- *A student from a rural background in Thanjavur district (East Zone)*

In Sivagangai and Theni districts (South Zone), students expressed that hands-on learning and extensive speaking exercises empowered them to overcome interview hesitation and build professional confidence. In Salem district (West Zone), students appreciated the context-specific and inclusive modules designed to strengthen their interpersonal skills. Similarly, in Kanyakumari and Tirunelveli districts (South Zone), sessions aimed at empowering the students with limited communication abilities helped them develop alongside their more confident peers. These initiatives also encouraged greater participation in competitive exams among economically backward students, ensuring that students are equipped with a diverse set of effective communication skills.

"The Cambridge English course offered in virtual mode under the Naan Mudhalvan Scheme was highly beneficial. The course included group discussions, resume preparation, and mock interviews. The speech recording tool was particularly useful in improving pronunciation and fluency, and the individual activities helped enhance my speaking skills. Overall, I found the course engaging and practical."

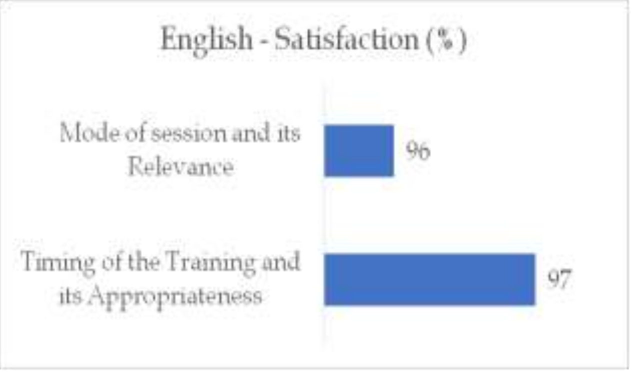
- *A girl student from Anna University, Madurai campus*

Complementing these inputs, the **learning materials** serve as vital resources, reinforcing classroom instruction and addressing accessibility challenges and are rated as exceeding expectations by 50% of students and meeting expectations by 45% across the state. In the Nilgiris, Dharmapuri, and Krishnagiri districts (West Zone), the districts where more tribal students were enrolled, the tailored and flexible learning materials were valued, as they accommodated their domestic responsibilities and enabled the smooth integration of learning into their daily lives.

A faculty member from The Nilgiris noted that the English course under the Naan Mudhalvan Scheme included modules for creating and updating LinkedIn profiles. This valuable addition enabled students to connect with professional networks and explore better job opportunities. It went beyond language training to introduce students to digital professionalism and personal branding.

For rural and female students in Villupuram, Tiruvallur, and Tirupattur districts (North Zone), step-by-step learning materials addressed communication gaps with clear progression from basic conversations to formal writing.

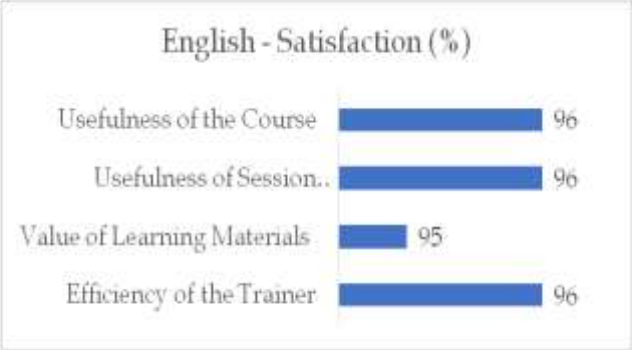
The **effectiveness of trainers** has played a key role in enhancing the learning experience and helping students develop essential skills. In Karur district (East Zone), 50% of the students felt that trainer efficiency exceeded their expectations, while 44% said it met their expectations. This practical guidance proved transformative for first-generation learners, boosting their professional readiness through tailored teaching methods focused on public speaking and workplace communication. Similarly, in the South Zone districts of Theni, Tirunelveli, and Thoothukudi (South Zone), personalised trainer support has successfully overcome infrastructure



"Attending Naan Mudhalvan training sessions at the designated hub institution required a minimum expenditure of INR 100 per trip for transportation. For students residing in hostels, this additional cost puts pressure on their limited budgets. Moreover, the extended travel time affects our ability to manage academic schedules and rest, especially when the hub institution is located far away. Balancing these logistical challenges with regular academic responsibilities has become increasingly difficult."

- *A female student from an engineering institution in Tirunelveli*

challenges, ensuring strong learning outcomes for rural and female students. A government Polytechnic faculty from Coimbatore shared that *"It was heartening to see our students learning beyond their syllabus textbooks through the Naan Mudhalvan Scheme. The way the industry–academic gap is being bridged is commendable.*



*What was most inspiring was how the young trainers conducted the sessions with energy and enthusiasm, offering practical insights and responding to students' queries with real-world solutions. This exposure is motivating our students to think beyond theory and gain confidence for their careers."*The course was implemented through **online, offline, and hybrid sessions** at different institutions. 50% of the students said the delivery exceeded their expectations, and 45% felt it met their expectations. In rural and Tier III areas like Dharmapuri, Krishnagiri, and The Nilgiris (West Zone),the offline sessions gave them confidence and helped students from tribal communities to improve their communication skills, like body language and interpersonal skills, and get ready for jobs.

On the other hand, students from the engineering college in Salem expressed, "We expected that the English course would help improve our communication and speaking skills. However, since it was delivered online, it was not effective for individual interaction or personalised feedback. The course lacked opportunities for real-time speaking practice. Additionally, a single learning kit was shared among 7 or 8 students, which made it difficult to gain any meaningful, hands-on experience. We strongly feel that the course should be offered offline to maximise its impact."

To facilitate the students, **training sessions** were arranged to fit academic schedules, minimising logistical challenges and boosting participation. With 53% of students rating the timing as exceeding expectations and 45% saying it met their expectations, daytime sessions in Madurai, Sivagangai, and Theni districts (South Zone) effectively addressed logistical difficulties, particularly for tribal and female students. This thoughtful scheduling allowed for focused engagement, easing both academic

> *"The sessions we had on public speaking and presentation skills helped me come out of my shell. Earlier, I was hesitant to even ask doubts in class. Now, I feel more confident presenting ideas and participating in interviews."*
>
> \- *A final year student from Coimbatore*

and personal stress.

The shortfalls of the course among the students were minimal, related to aspects like lack of real-time learning due to online sessions (3%) and expectations mismatch (4%) among students looking for more advanced learning methods. Students and Stakeholders have insisted that, there may be increased offline and interactive sessions to enhance real-time speaking practice and personalised feedback.

The English course equips students with the confidence and skills they need to succeed academically, professionally, and socially. Through its thoughtfully designed sessions, personalised learning materials, and strong trainer support, the program empowers students to unlock their full potential.

COMMON SKILLING COURSE -MICROSOFT ESSENTIALS

The Microsoft Essentials course offers students a comprehensive skill set in Microsoft Office tools, enhancing their proficiency in creating, editing, and formatting professional documents, spreadsheets, and presentations. With modules on Word, Excel, and PowerPoint, the course is expected to enable the students on data visualisation, productivity, and confidence for academic, workplace, and creative purposes. Assessments ensure mastery, while practical sessions and training employable skills, making it highly beneficial for career growth and efficiency in a digital world.

Outcome and Impact

The Microsoft Essential Course under the Naan Mudhalvan Scheme is expected to transform the career prospects of Tamil Nadu's students by equipping them with critical digital skills for professional success. With 55% of students rating it as exceeding expectations and 42% noting it meets expectations, students from marginalized communities praised its role in bridging the digital divide through improved basic computer skills and access to digital learning platforms.

Table 4.2: Perception of Students – Microsoft Essentials

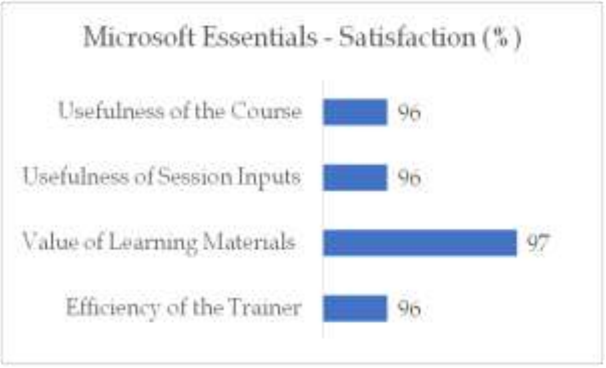
Category		Microsoft Essentials (%)		Average % of Satisfaction
		Engineering	Polytechnic	
Usefulness of the course	Didn't meet expectations	3	5	96
	Exceeds expectations	50	59	

	Met expectations	47	36	
Usefulness of the session inputs	Didn't meet expectations	2	6	96
	Exceeds expectations	46	56	
	Met expectations	52	38	
Value of the learning material provided	Didn't meet expectations	2	5	97
	Exceeds expectations	47	57	
	Met expectations	51	38	
Efficiency of the trainer	Didn't meet expectations	2	7	96
	Exceeds expectations	47	56	
	Met expectations	51	37	
Mode of session and Relevance	Didn't meet expectations	2	7	96
	Exceeds expectations	46	55	
	Met expectations	52	38	
Timing of the Training and Appropriateness	Didn’t meet expectations	2	6	96
	Exceeds expectations	47	53	
	Met expectations	51	41	

Source: Field Survey – 2024-2025

This strong foundation is further strengthened by **session inputs** carefully designed to meet industry standards, ensuring that Tamil Nadu’s student gain practical and relevant skills and 51% rated these sessions as exceeding their expectations, while 45% felt they met them. Additionally, 4% of students suggested incorporating advanced tools such as

Google Workspace other cloud-based document management tools to enhance real-time collaboration, workflow automation, and multi-platform integration, building upon the foundational skills already taught.



In Thoothukudi and Kanniyakumari districts (South Zone), career-focused training helped students build confidence in handling digital devices, bridging the gap between rural and urban areas. Meanwhile, in Chennai district (North Zone), sessions tailored to internship needs equipped students to apply their skills effectively in real-world settings.

"As a first-generation learner, the Microsoft Essentials course offered under the Naan Mudhalvan Scheme was very impactful. The training, aligned with local employment needs, significantly enhanced my career readiness. The practical, placement-oriented sessions helped me build essential digital skills, especially in tools like Word, Excel, and PowerPoint. This foundation has boosted my confidence and better prepared me for technology-driven job roles. I believe such initiatives can greatly improve employability for students across the state."

– A First-Generation Engineering Student, Madurai District

The **learning materials** play a crucial role in supporting students' skills by providing hands-on practice with Microsoft Word, Excel, and PowerPoint across Tamil Nadu, with 52% students feeling that these materials exceeded their expectations, while 45% said they met their needs. In districts like Chennai and Tiruvallur (North Zone), students particularly appreciated the content, which helped them create professional documents relevant to small business environments.

In Ariyalur and Karur districts (East Zone), students found that the learning materials provided were **clear and simple,** beneficial for academic report writing and creating professional documents. In The Nilgiris district (West Zone), visually supportive materials enabled first-time users to learn independently, adopting fundamental computer skills. These accessible resources ensure the student gains practical digital fluency, paving the way for their career advancement.

Trainers play a pivotal role in shaping the learning journey of Tamil Nadu's students. 52% of the students felt that the trainers' effectiveness in delivering the content exceeded their

expectations, while 44% said their expectations were met. Although a small number, 4%, mentioned that the pace of teaching didn't always match their needs, most students praised the trainers for their ability to adapt methods to different learning levels. Their skilful classroom management and personalised instruction greatly enhanced the overall experience.

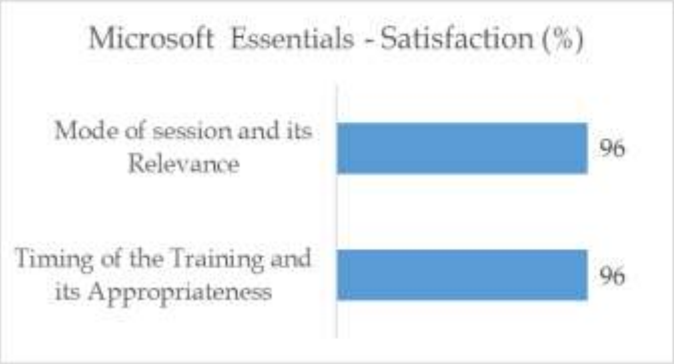
The **trainers** in Coimbatore and Salem districts, (West Zone) as claimed by the students have engaged the students using local job market examples that helped in contextualising the learning. In Tiruvallur and Villupuram districts (North Zone), the trainer supported the students with local language assistance whenever required, which promoted an inclusive learning environment. While adaptive trainer practices, such as rescheduling the sessions and using alternate tools in rural areas, overcame limited lab access through flexible scheduling. This tailored instruction has ensured that students across the state master digital tools effectively.

> *"As a student from Coimbatore, I found that the trainers in the Naan Mudhalvan Scheme made a real difference in my learning experience. They were patient and supportive, always explaining concepts clearly and tailoring the training to make even the most difficult topics easier to understand. With their guidance, I not only gained practical skills but also the confidence to apply them in my career. I believe this scheme is a valuable opportunity for students like me to learn, grow, and succeed."*

The **delivery mode, online, offline, or hybrid,** enhances accessibility, making the course highly relevant for Tamil Nadu's students. Rated as exceeding expectations by 51% of students and met expectations by 45%, with 4% noting online portal challenges, offline sessions in Dharmapuri and Krishnagiri districts (West Zone) addressed skill gaps, maintaining broad relevance despite limitations for academic documentation in Tiruvallur and Villupuram. In Thoothukudi district of South Zone, the online mode demonstrated high satisfaction and preparedness. This flexible approach aligns with modern workplace needs, equipping students to overcome infrastructural barriers. The course's adaptable delivery fosters state-wide digital readiness.

The careful **timing of sessions** has played a key role in maximising participation among students by aligning with their academic schedules. 50% of the students rated the session timing as exceeding their expectations, while 46% said it met their needs. Although 4% preferred classes after regular class hours, holding classes during the day proved especially beneficial for rural and tribal students, as it addressed mobility concerns.

Scheduling sessions during institution hours also made better use of available infrastructure, contributing to high levels of satisfaction and readiness across the state. This thoughtful approach helps minimise logistical challenges and allows students to focus entirely on developing their digital skills.



Four per cent of students suggested including advanced tools for real-time collaboration, and another 4% of students felt the teaching pace did not always align with their learning needs, suggesting a need for more tailored instruction. The students preferred that the advanced tools, like Google Workspace, be incorporated and the teaching pace be adjusted to align with diverse learning needs. Convincingly, the Microsoft Essential Course, through its innovative approach, equips students with advanced digital skills, preparing them for success in global professions.

EVALUATING THE DOMAIN SPECIFIC COURSES - ENGINEERING AND POLYTECHNIC

DOMAIN: ENGINEERING

Evaluation of Domain Specific Courses involves evaluating the technical courses considered for the study of the Engineering and Polytechnic domains. The following courses and their respective branches are assessed based on the primary data collected from the students of sample institutions through questionnaires and Focus Group Discussions held with the stakeholders of the scheme. The percentage of satisfaction represents the students' response on Met Expectations and Exceeds Expectations for the course.

Civil Engineering	Structural Design, Modelling and Detailing
Mechanical Engineering	Electric Vehicle Technology and Manufacturing
Electronics & Communication Engineering	Networking Essentials
Electrical & Electronics Engineering	EV Design
Computer Science & Engineering / Information Technology	Full Stack Development with JAVA

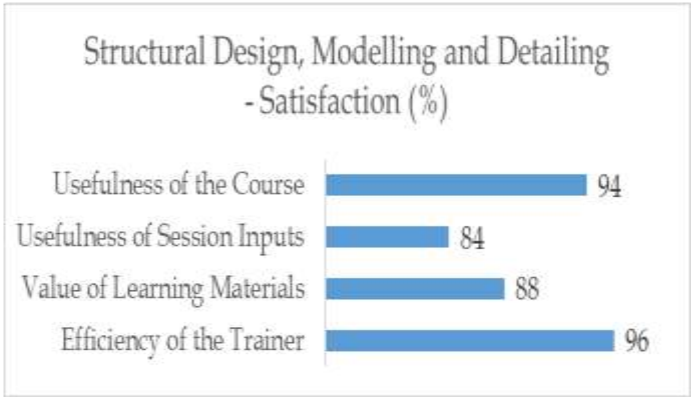
COURSE 1: STRUCTURAL DESIGN, MODELLING AND DETAILING - CIVIL ENGINEERING

The course "Structural Design, Modelling and Detailing" is a vital skill-enhancement program offered to Civil Engineering students, aimed at bridging the gap between academic knowledge and industry requirements. It focuses on practical aspects of structural engineering, including the analysis, design, and detailing of structural elements using modern software tools. The course enables students to create accurate models and structural plans, interpret technical drawings, and adhere to standard design codes. The training in this course significantly enhances the employability of the students by preparing them for roles in construction firms, design consultancies, and infrastructure projects.

Table 4.3: Perception of Students – Structural Design, Modelling and Detailing

Structural Design, Modelling and Detailing – Satisfaction (%)	
Usefulness of the Course	94
Usefulness of Session Inputs	84
Value of Learning Materials	88
Efficiency of the Trainer	96
Mode of session and its Relevance	90
Timing of the Training and its Appropriateness	93

Source: Field Survey – 2024-2025

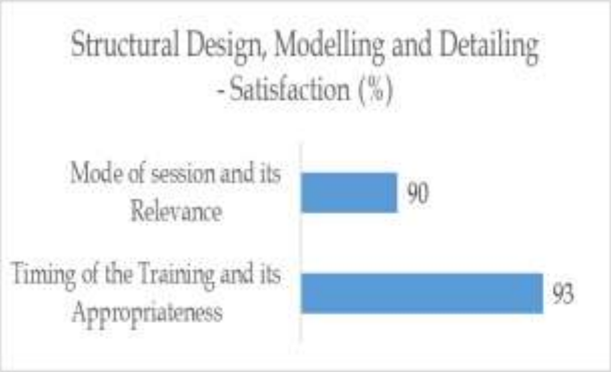


Additionally, the course design lays a strong foundation for those aspiring to pursue higher studies or research in structural engineering. Given its technical nature and direct industry relevance, evaluating this course is essential to assess its effectiveness, identify gaps in content or delivery, and ensure it continues to meet the evolving demands of the civil engineering profession.

Students across Tamil Nadu found that the Structural Design, Modelling and Detailing course was highly effective for civil engineering students; with 46% stating it exceeded expectations and 48% noting it met expectations. In the East zone's Thanjavur, the rural students have claimed that they gained a professional understanding of structural design

processes, boosting their confidence for placements in infrastructure projects. In the West zone, including Salem and Dharmapuri, the course helped in bridging the academic theory with practical project demands, enabling students to pursue internships and entry-level roles with assurance.

Building on this, the **session inputs** were acknowledged, with 36% of students rating the materials as exceeding expectations and 48% as meeting expectations, especially in the Tirupattur and Villupuram districts of the North zone, students expressing that step-by-step guides and diagrams simplified complex design concepts. A girl student from Thanjavur district stated that the explanations and diagrams made complex concepts easy for her to grasp and remember. As a girl, she felt the course was a game-changer, preparing her for exciting opportunities in the infrastructure sector and fuelling her dreams of a successful civil engineering career.



The **learning materials** were valued by 88% of students across Tamil Nadu as resources with long-term utility, particularly in the Salem and Krishnagiri districts of the West zone, where tribal and rural students used them as references for semester projects.

Trainers of this course were graded to be highly effective, with 44% of students noting they exceeded expectations and 52% stating sessions met expectations. The students from Thanjavur of East Zone specifically state that bilingual delivery clarified technical terms. In the West (Dharmapuri and Krishnagiri) and North (Tirupattur) zones, trainers used real-life site photographs and practical demonstrations to improve conceptual clarity and engagement with tools like AutoCAD.

In the North and West zones, like Tiruvallur, Villupuram, and Salem, the session was held online. The course helped students learn software skills connected to modern construction tools. Since the sessions took place during institution hours, 93% of students thought the timing was perfect. This was especially true for rural students in the East and South zones, like Thanjavur and Sivagangai, who appreciated not having to travel extra or attend classes after hours. In the tribal areas of the West zone, holding classes during institution hours helped students attend more regularly and stay focused without getting tired. Overall, by fitting the course into students' regular schedules, the learning experience was rated as good by students across Tamil Nadu.

Additional to this course, the students also recommended the following advanced courses to enhance the Civil Engineering curriculum and better employability

1. Smart Cities & Urban Infrastructure
2. Sustainable Construction & Green Buildings
3. Seismic Design & Earthquake Engineering
4. Geotechnical Engineering & Deep Foundation Design
5. Advanced Computational Fluid Dynamics (CFD)

"Coming from a marginalised community, I often found textbooks to be unaffordable. Despite this, the clear and accessible course content provided by the Naan Mudhalvan Scheme became my guiding resource. As I prepare for job placements, I consider these materials essential tools for achieving my career aspirations."

- An Engineering student from Sivagangai

COURSE 2: ELECTRIC VEHICLE TECHNOLOGY AND MANUFACTURING - MECHANICAL ENGINEERING

The course "Electric Vehicle Technology and Manufacturing" is a program designed for Mechanical Engineering students, aligning with the global shift toward sustainable transportation. As per the design of the course, the students are expected to gain practical knowledge of EV components, design considerations, and the integration of mechanical and electrical systems, preparing them for careers in one of the fastest-growing industries. With increasing government and industry focus on electric mobility, this course offers strong career prospects in EV manufacturing, R&D, and component design. Evaluating the

"Coming from a region with limited access to knowledge about the electric vehicle (EV) industry and facing numerous hardships, the new learning resources provided by the Naan Mudhalvan Scheme gave me a crucial competitive edge. Despite the challenges, these courses and materials enabled me to understand emerging technologies and prepare effectively for the job market."

- An Engineering student from Tirunelveli

course is essential to ensure that the content remains up-to-date, industry-relevant, and impactful in preparing students for emerging roles in the electric vehicle sector.

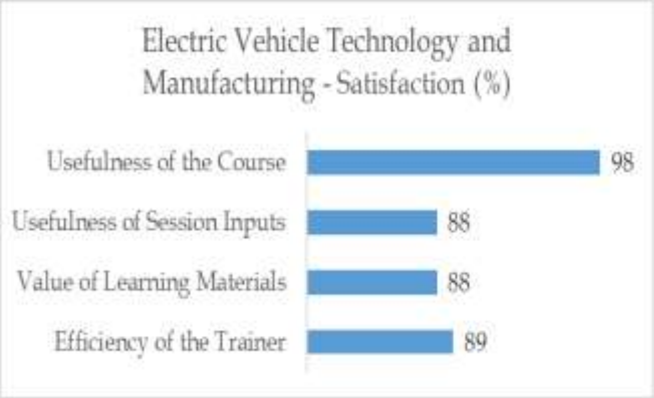
TABLE 4.4: PERCEPTION OF STUDENTS –ELECTRIC VEHICLE TECHNOLOGY AND MANUFACTURING

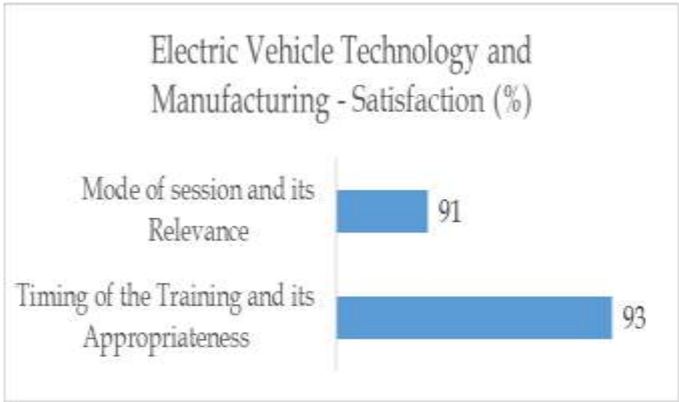
Electric Vehicle Technology and Manufacturing – Satisfaction (%)	
Usefulness of the Course	98
Usefulness of Session Inputs	88
Value of Learning Materials	88
Efficiency of the Trainer	89
Mode of session and its Relevance	91
Timing of the Training and its Appropriateness	93

Source: Field Survey – 2024-2025

Students who took this course across Tamil Nadu rated the electric vehicle (EV) course highly, with 47% stating it exceeded expectations and 51% noting it met expectations, particularly in the North zone's Tirupattur and Villupuram, where rural students claimed to have gained exposure to EV manufacturing opportunities not covered in their regular curriculum. In the West zone, some female students from Salem conveyed that a clear understanding of battery systems and motor design enhanced their technical proficiency.

The **inputs of the session**, valued by 88% of students as it exposed them for real-world relevance, which played a pivotal role in simplifying complex EV design topics. Particularly for tribal students in Salem, found technical notes on motor types and battery management systems highly accessible. In the North (Tirupattur and Villupuram) and South (Theni and Tirunelveli) zones, rural students valued practical illustrations and sample schematics have complemented their classroom learning.





The **learning materials**, appreciated by 88% of students across Tamil Nadu that was offered through PDFs recorded sessions and interactive tutorials. Students who enrolled for this course have mentioned that they benefited from online videos and pre-recorded lessons by referring to the same repeatedly for project work and placement preparation.

Trainers across Tamil Nadu were highly effective, with 47% of students noting they exceeded expectations and 42% stating that the sessions met expectations, particularly in the North zone (Tirupattur and Villupuram), where case studies from Indian EV companies provided valuable context. A vast majority 91% of the students have found the mix of the course involving online and hybrid learning as helpful. In the Salem district of the West Zone, offline demonstrations made learning easier for the rural students and claimed that good facilities were provided through the scheme for their learning.

> *"The sessions by experts from TATA Motors and Brakes India were inspiring. It gave us a peek into how the industry works and what skills they really expect. More such sessions with real-world exposure would help us prepare better."*
>
> \- *An Engineering Student*

In the tribal areas of Salem, part of the West zone, participation and punctuality were boosted by scheduling the course during regular institution hours. The **sessions** were aligned seamlessly with academic timetables. Concentration and retention were enhanced through this integration, allowing regular coursework and skill-building to be managed effectively by the students.

Feedback was given by a student, who said, **"Having the sessions during institution hours have been really helpful. Extra travel and after-hours attendance were avoided, so better concentration was possible. Feeling less tired, both regular classes and this course were kept up without being overloaded".** This thoughtful alignment created a cohesive academic experience, enabling students across Tamil Nadu to maximise their learning outcomes.

The students proposed the following advanced courses to strengthen the career prospectus in Mechanical Engineering curriculum:

1. Additive Manufacturing & 3D Printing
2. Robotics & Automation in Manufacturing
3. Autonomous Vehicles & Electric Propulsion Systems
4. Thermal Systems & Heat Transfer Optimisation
5. Nano-engineering & Micro-technology

"We don't have the option to select courses that align with our interests. If we were allowed to choose, the learning would be more meaningful."

- A Mechanical Engineering student

COURSE 3: NETWORKING ESSENTIALS - ELECTRONICS & COMMUNICATION ENGINEERING (ECE)

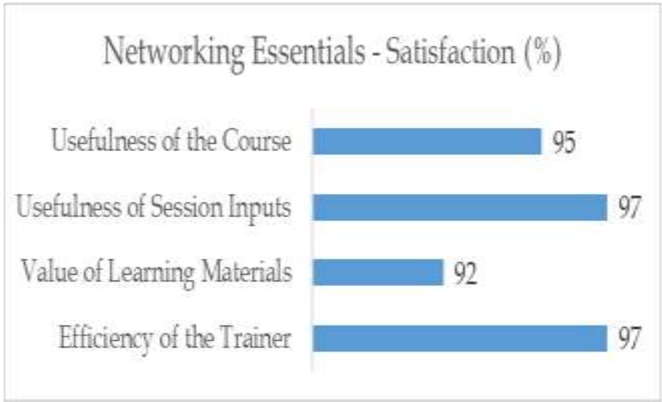
The course "Networking Essentials" is a foundational program offered to Electronics and Communication Engineering (ECE) students, aimed at equipping them with core knowledge and practical skills in computer networking. This course bridges the gap between electronics and IT, enabling students to understand how communication systems integrate with modern digital networks. It prepares students for roles in network administration, telecommunications, IoT infrastructure, and cyber security. With the growing importance of connectivity in all sectors, ranging from smart homes to industrial automation, networking skills have become highly valuable. Evaluating the course is crucial to ensure that it aligns with current industry standards, keeps pace with technological advancements, and effectively supports students' academic and professional growth in the ECE domain.

TABLE 4.5: PERCEPTION OF STUDENTS – NETWORKING ESSENTIALS

Networking Essentials – Satisfaction (%)	
Usefulness of the Course	95
Usefulness of Session Inputs	97
Value of Learning Materials	92
Efficiency of the Trainer	97
Mode of session and its Relevance	91
Timing of the Training and its Appropriateness	93

Source: Field Survey – 2024-2025

Students across Tamil Nadu recognised the IT networking course's career relevance, with 48% stating it exceeded expectations and 47% noting it met expectations. In the East zone, especially in districts of Thanjavur and Karur, the students belonging to the marginalized communities have shared that they gained valuable IT skills that are in high demand, particularly for jobs in electronics and communication.



Over in the West zone, in Coimbatore and Krishnagiri districts, the students have claimed that the training content was closely connected to what they were learning in their regular curriculum, but it went beyond by introducing roles like network administration. This helped prepare them better for industry requirements. Meanwhile, rural students in the North and South zones, such as Tirupattur, Madurai, Theni, and Tirunelveli saw the course as a stepping stone to earning certifications that are recognised around the world.

The **session inputs**, acknowledged by 46% of students as exceeding expectations and 51% as meeting expectations, significantly enhanced understanding. The student representing the Tirupattur and Villupuram districts of North zone shared that the flowcharts and annotated diagrams clarified OSI and TCP/IP models.

In the East zone (Karur and Trichy) and West zone (Coimbatore and Salem), according to the observations of the faculty members, worksheets and digital tools fostered active learning, making complex concepts accessible.

Across Tamil Nadu, 92% of students appreciated the **learning materials**. In the East, especially in Trichy and Karur, and in the South, including Madurai, Theni, and Sivagangai, the students have found that these materials are particularly helpful for completing projects and preparing for job placements. The positive impact of the course was made further stronger by the trainers, whose clear and effective teaching brought the content to life and helped students get the most out of the course.

The **trainers** received great appreciation from the students. About 45% felt that the trainers went beyond their expectations, while another 52% said the sessions met what they were hoping for. This was especially true in the West zones like Coimbatore and

Salem, and in the South zone in Tirunelveli. Students appreciated how real-time simulations were used to make difficult topics much clearer and easier to understand.

> *"Our college lab has old systems that lag even when we open basic software. For such technical courses, we need updated infrastructure; else, we cannot practise what we learn in the sessions."*
>
> - *An Electronics engineering student*

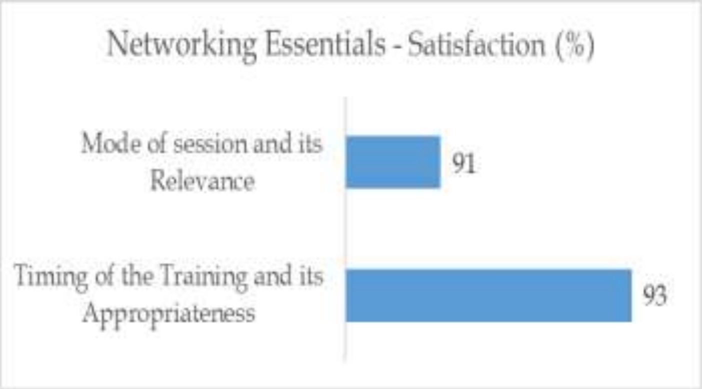
In the Ariyalur and Karur districts of the East Zone, bilingual instruction made technical jargon accessible to rural students, fostering inclusivity. With 69% of sessions conducted online and others in hybrid formats, the delivery mode was highly relevant, as 43% of students reported it exceeded expectations and 48% said it met expectations, particularly in urban Coimbatore and Chennai, where online flexibility and digital tools were preferred.

> *"As a first-generation learner from a rural area, I found the hybrid sessions offered by the Naan Mudhalvan Scheme to be a perfect mix of hands-on learning and online theory. I especially appreciated the real-time demonstrations that made complex concepts easier to understand. The combination of practical guidance and online lessons helped me feel confident working in virtual labs. I also valued the course schedule, as it fit well with my regular institution hours, making it easier to stay focused and manage both the course and my other studies. This balance kept me motivated and helped me succeed in the program."*
>
> *A first-generation learner from a rural area in Salem*

On the other hand, in the East (Ariyalur, Karur, and Thanjavur) and North (Tirupattur and Villupuram) zones, the sessions were deemed appropriate by 93% of students, with mid-day timing ensuring smooth academic integration. Clear alignment with institution timetables reduced scheduling conflicts, promoting consistent participation. This thoughtful integration enabled students across Tamil Nadu to balance academic responsibilities and skill-building, resulting in enhanced outcomes and minimal dropout rates.

The students suggested the following advanced courses to enhance the curriculum of Electronics and Communication Engineering (ECE):

1. 5G/6G Wireless Technologies
2. Advanced Digital Signal Processing (DSP)
3. VLSI Design & Nano-electronics
4. Optical Communication &Photonics
5. Artificial Intelligence for Communication Networks



COURSE 4: EV DESIGN - ELECTRICAL & ELECTRONICS ENGINEERING (EEE)

The course "EV Design" is a specialised program offered to Electrical and Electronics Engineering (EEE) students, focusing on the design and development of electric vehicles. The course emphasises the integration of electrical components and systems to create safe, reliable, and high-performing electric vehicles. With the global automotive industry transitioning toward cleaner technologies, the course offers students a timely and relevant learning experience.

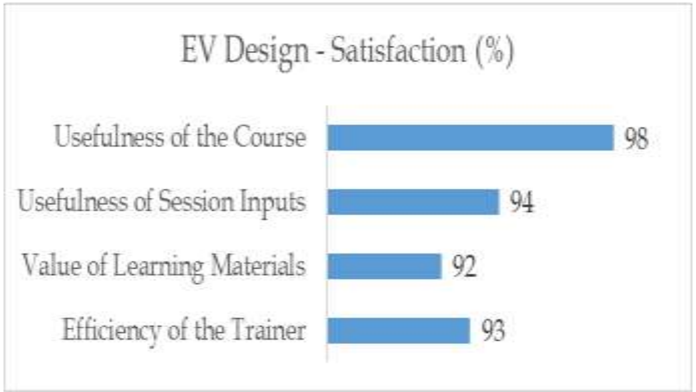
It enhances their skills in system-level thinking, component selection, and sustainable design practices. Given the rapid evolution of electric mobility and the rising demand for skilled professionals, evaluating this course is critical to ensure it remains current, technically sound, and capable of preparing students for future opportunities in the green mobility sector.

TABLE 4.6: PERCEPTION OF STUDENTS –EV DESIGN

EV Design – Satisfaction (%)	
Usefulness of the Course	98
Usefulness of Session Inputs	94
Value of Learning Materials	92
Efficiency of the Trainer	93
Mode of session and its Relevance	89
Timing of the Training and its Appropriateness	90

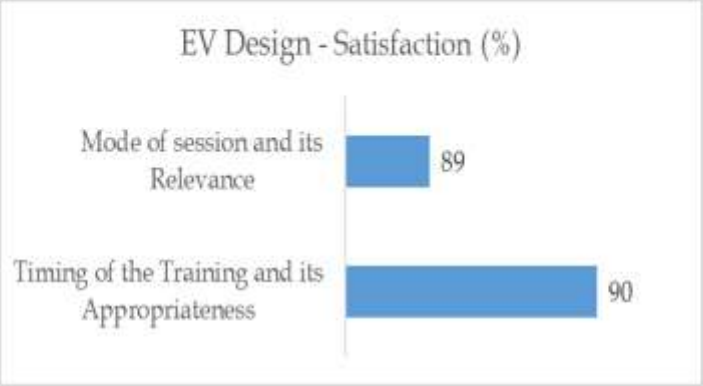
Source: Field Survey – 2024-2025

Students across Tamil Nadu embraced the electric vehicle (EV) design course for its strong career alignment, with 45% stating it exceeded expectations and 53% noting it met expectations, particularly in the Ariyalur district of the East zone, where students saw expanded opportunities in EV manufacturing and sustainable mobility solutions.



In Thoothukudi district, valuable insights into interdisciplinary applications in electronics and mechatronics were provided to rural students. *A student from Thoothukudi has claimed that he was greatly helped by the course, as complex concepts were made clearer through practical examples and demonstrations. Confidence in his skills was built through the well-structured sessions, which were designed to prepare students for emerging industry roles. The knowledge and experience gained were recognised as essential for his career growth and future opportunities.*

According to the discussions with the students, it was understood that the Knowledge of EV-specific technologies, such as lithium-ion batteries and regenerative braking, boosted their job market competitiveness and inspired internship pursuits. The course's **session inputs**, including e-manuals, design blueprints, and simulation models, were highly valued, with 40% of students rating them as exceeding expectations and 54% as meeting expectations. This is especially in rural areas of the West (Coimbatore), East (Ariyalur), and South (Thoothukudi) zones, where step-by-step guidance on EV design simulations clarified complex concepts. Students were able to effectively link theoretical principles to practical design approaches through accessible, structured content.



Valued by 92% of students across Tamil Nadu, the **learning resources**, including simulation models and diagrams, provided enduring benefits, with North zone students in Tiruvallur applying them in project work and lab experiments.

In the rural areas of Thoothukudi in the South zone, the students expressed that the e-resources shared by the trainer as part of the course were found to be incredibly helpful. These materials supported placement interview preparation and study for external certifications. One of the students expressed that a reliable guide was provided by the e-resources, which could be revisited anytime to stay ready for exams and job opportunities.

Trainers were a cornerstone of the course's success, with 42% of students noting they exceeded expectations and 51% stating sessions met expectations, particularly in the East (Ariyalur) and West (Coimbatore and Salem) zones, where the students have shared that the complex topics were simplified effectively. In the North's Tiruvallur, rural students valued trainers' use of real-world EV case studies from Indian manufacturers, while those in the Thoothukudi district comes under Southzone, appreciated the blend of technical explanations and career guidance.

With 59% of students claiming that the sessions were conducted online and for 30% in hybrid mode, the delivery format was deemed relevant by 89% of students. Particularly in the West (Coimbatore) and North (Tiruvallur) zones, where hybrid models balanced screen-based learning with lab demonstrations. The sessions were considered appropriate by 90% of students held during institution hours, with rural and tribal students in the West (Coimbatore) and North (Tiruvallur) zones appreciating the removal of logistical barriers, which boosted attendance.

In urban and semi-urban areas of the East zone (Ariyalur) and South zone (Thoothukudi), integration with academic timetables ensured focus without disrupting core subjects. Efficient scheduling minimised conflicts, promoting consistent participation and retention of advanced topics. This alignment allowed students across Tamil Nadu to balance their curriculum with skill-building, resulting in enhanced performance and engagement.

Most of us prefer offline training. It's easier to focus, ask questions, and do group activities. The online sessions are too long and sometimes our internet doesn't support it. A hybrid model could work better.

- An Engineering student from Madurai

The students recommend the following advanced courses to enrich their employability and career prospectus in Electrical and Electronics Engineering domain:

1. Power Electronics & Renewable Energy Integration
2. Electric Vehicle Powertrain Design & Battery Management Systems (BMS)
3. Quantum Computing & Quantum Cryptography
4. 5G and Beyond (6G) Communication Systems
5. IoT and Embedded Systems for Smart Grids

COURSE 5: FULL STACK DEVELOPMENT WITH JAVA - COMPUTER SCIENCE & ENGINEERING / INFORMATION TECHNOLOGY

The course "Full Stack Development with JAVA" is a comprehensive and industry-relevant program designed for students of Computer Science & Engineering and Information Technology. The course emphasises building real-time web applications, API integration, and deployment strategies, enabling students to understand the complete software development lifecycle.

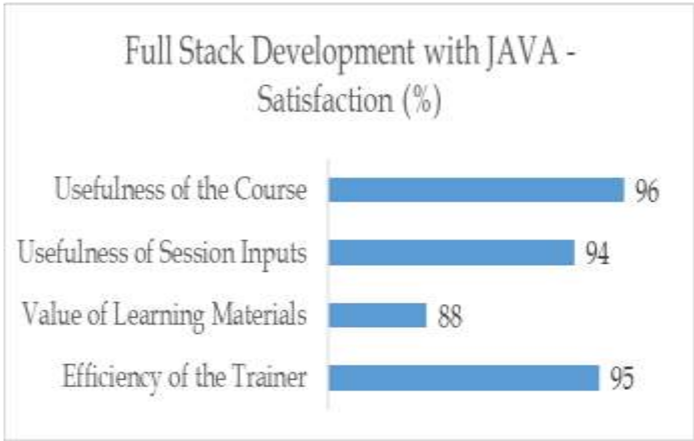
Table 4.7: Perception of Students - Full Stack Development with JAVA

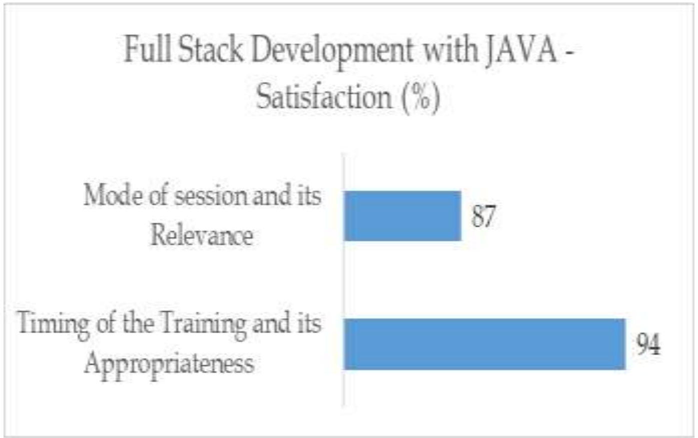
Full Stack Development with JAVA – Satisfaction (%)	
Usefulness of the Course	96
Usefulness of Session Inputs	94
Value of Learning Materials	88
Efficiency of the Trainer	95
Mode of session and its Relevance	87
Timing of the Training and its Appropriateness	94

Source: Field Survey – 2024-2025

This course also strengthens their readiness for internships, product development, and tech-based entrepreneurship. With the tech industry increasingly favouring full stack developers for their versatility, evaluating the course implementation is essential to measure the efficacy of the course for the students, its content delivery and the appropriateness of the schedule for the participating students. Students across Tamil Nadu lauded the Full-stack development with Java course for its **career relevance**, with 47% stating it exceeded expectations and 49% noting it met expectations. This is

particularly true in Thanjavur and Tiruchirapalli comes under, which fall under the East zone, where students claimed to have gained clarity on applying coding concepts in IT firms. Students from Tiruvallur district of North zone valued exposure to software architecture, while those in the students of Sivagangai, and Thoothukudi districts of South zone found full-stack development demystified, boosting technical confidence.





The **session inputs**, appreciated by 43% of students as exceeding expectations and 51% as meeting expectations, and was claimed to be instrumental in building coding fluency, particularly in the West zone (Coimbatore and Salem) and South zone (Madurai, Sivagangai, and Thoothukudi) zones, where the module-wise breakdown clarified complex concepts. Recognized by 88% of students across Tamil Nadu, the learning materials, including e-tutorials and reusable codebases, offered long-term benefits, with North (Tirupattur and Tiruvallur) and East (Thanjavur and Tiruchirapalli) zone students revisiting them for concept reinforcement.

In the Kanniyakumari and Thoothukudi districts of the South zone, as well as in Salem in the West zone, final projects were adapted by students for hackathons and internships. These projects were integrated into technical portfolios to showcase their skills. Job interview preparation and skill demonstrations were supported by these industry-standard resources, which were provided as part of the course. The students' acknowledged their readiness for professional opportunities was significantly enhanced through the use of these materials.

Trainers were highly effective said 41% of students noting they exceeded expectations of the learners and 54% stating sessions met expectations. This is particularly in the Dharmapuri and Krishnagiri districts of the West Zone, where students appreciated simplified explanations of complex topics. Students in the East zone (Thanjavur and Tiruchirapalli) and South zone (Kanniyakumari, Madurai, Sivagangai, and Thoothukudi),

valued one-on-one doubt-clearing and real-world analogies for concepts like session management.

63% of the students claiming that the format of **sessions** was delivered online and 32% in hybrid mode, the format of the course was deemed relevant by 87% of students, with urban Coimbatore and Chennai students praising consistent platform use for backend deployment. In rural East (Thanjavur and Tiruchirapalli) and North (Tirupattur and Tiruvallur) zones, hybrid sessions allowed in-person clarification after online instruction, while screen-sharing and recorded sessions supported continuous practice.

The sessions were conducted during institution hours, considered appropriate by 94% of students, with rural and semi-urban students benefiting from avoiding late-evening travel. In the South (Kanniyakumari, Madurai, Sivagangai, and Thoothukudi) and West (Dharmapuri and Krishnagiri), integration with academic timetables ensured balance, promoting consistent participation. The efficient scheduling minimised disruptions, allowing students across Tamil Nadu to excel in both academic and skill-building processes, resulting in improved project outcomes and placement readiness.

> *"Coming from a community with limited access to technology, I found the course to be extremely impactful. Complex technical concepts were broken down and explained clearly through carefully designed sessions and materials. My technical confidence was greatly boosted as practical skills were built step by step. This learning was a crucial opportunity to overcome barriers and prepare for better career prospects in the tech industry. The support provided by the course was deeply appreciated, as it helped me feel empowered and ready to take on new challenges."*
>
> *– A girl student who claimed to come from socially deprived community*

The students put forward the following advanced courses to bolster the curriculum of Computer Science & Engineering / Information Technology:

1. Artificial Intelligence (AI) & Machine Learning(ML)
2. Block-chain & Crypto-currencies
3. Quantum Computing & Quantum Algorithms
4. Cloud Computing & Big Data Analytics
5. Cyber-security & Ethical Hacking

DOMAIN: POLYTECHNIC

The following polytechnic courses were evaluated based on primary data collected through student questionnaires and Focus Group Discussions conducted at selected sample institutions. The percentage of satisfaction represents the students' response on Met Expectations and Exceeds Expectations for the course.

Civil Engineering	Building Information Modelling
Mechanical Engineering	Industry 4.0
Electronics & Communication Engineering	PCB Design
Electrical & Electronics Engineering	Internet of Things
Computer Science & Engineering / Information Technology	Industrial Meta-verse using AR and VR

COURSE 1: BUILDING INFORMATION MODELLING - CIVIL ENGINEERING

The course "Building Information Modelling (BIM)" is a skill-oriented program offered to Civil Engineering students in the polytechnic stream, aimed at introducing modern construction and design practices. The course familiarises students with industry-standard software, enabling them to create accurate digital representations of physical and functional aspects of buildings. It enhances their understanding of structural elements, materials, and workflow coordination, preparing them for roles in drafting, design support, and construction planning.

With the construction industry increasingly adopting digital solutions, BIM offers strong job prospects in both public and private sectors. For polytechnic students, it opens doors to higher education and specialised technical roles. Evaluating this course is essential to assess its relevance, practical application, and effectiveness in providing students with skills that match current industry demands and future trends.

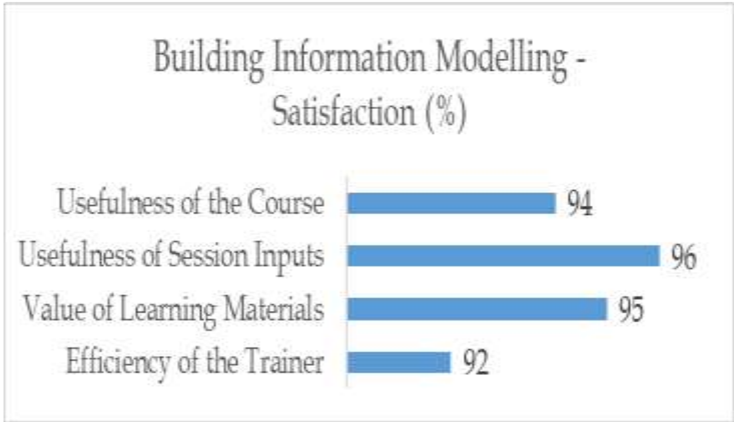
Table 4.8: Perception of Students -Building Information Modelling

Building Information Modelling – Satisfaction (%)	
Usefulness of the Course	94
Usefulness of Session Inputs	96
Value of Learning Materials	95

Efficiency of the Trainer	92
Mode of session and its Relevance	86
Timing of the Training and its Appropriateness	85

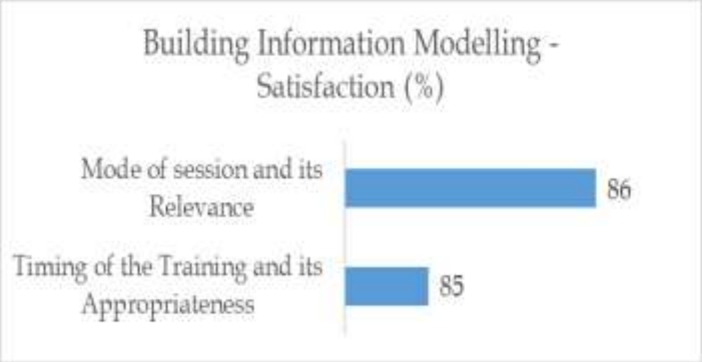
Source: Field Survey – 2024-2025

Students across Tamil Nadu endorsed that the Building Information Modelling (BIM) **course for its career relevance,** with 53% stating it exceeded expectations and 41% noting it met expectations, particularly in Thanjavur and Tiruchirapalli of East zone, where students gained a transformative approach to digital construction planning, boosting their confidence in job interviews.



North zone students from Tiruvallur and Villupuram developed awareness of smart construction workflows, while those in the South zone's Madurai and Thoothukudi districts, the students leveraged the training to create profiles for internships and freelance projects.

The **session inputs**, valued by 54% of students as exceeding expectations and 42% as meeting expectations, were pivotal in fostering logical thinking. This is expressed strongly in the North (Tirupattur and Tiruvallur) and East (Ariyalur and Thanjavur) zones, where progressive module designs transitioned from basics. Students from South zone particularly in Madurai and Thoothukudi found simulations of construction stages insightful, while West zone students highlighted the clash detection and digital plan coordination as highly relevant.



Students about 53% recognised as exceeding expectations and 42% as meeting expectations, the learning materials, including interactive BIM files and design flowcharts, enriched learning in the East (Karur and Tiruchirapalli). In Theni and Ariyalur districts of East zone, **course resources** were actively applied by students to diploma projects and

technical expos. Used as reference guides, these materials supported continuous upskilling. Their long-term value was amplified by the effective delivery provided by the trainers. As a result, greater confidence and technical clarity were demonstrated by students during presentations and evaluations, as claimed by the faculty members

Trainers were assessed as highly effective, with 51% of students noting they exceeded expectations and 41% stating sessions met expectations, particularly in the Tirunelveli district of the South zone, where bilingual delivery and individual mentoring clarified complex concepts. In the Ariyalur district of the East zone, rural students appreciated repeated software demonstrations, while West zone (Coimbatore and Salem) trainers used real-time project case studies, and North zone (Chennai) trainers provided personalised design feedback. This approach boosted learner confidence and competence in technical tasks.

The training was offered through three different modes: offline (44%), online (49%), and hybrid (7%), and 86% of students felt the approach was appropriate. In the West zone covering areas like The Nilgiris, Krishnagiri, and Dharmapuri—and in the South zone districts such as Sivagangai and Theni, offline classes helped students gain hands-on experience with software. Meanwhile, in the East (Tiruchirapalli) and North (Tirupattur), hybrid sessions gave rural students the chance to balance theory with practical lab work. This flexible setup accommodated different learning styles and helped ensure that students could consistently participate from anywhere.

Conducted primarily during institution hours, the **sessions** were considered appropriate by 85% of students, with South (Tirunelveli and Thoothukudi) and West (Salem and Krishnagiri) students claiming to have benefitted from minimal academic disruption. In the East, rural students have claimed to have avoided travel during peak academic periods, while North zone students managed their academic responsibilities alongside training. Thoughtful scheduling ensured full attendance and minimised conflicts, allowing students across Tamil Nadu to maintain a balanced learning experience, resulting in enhanced participation and performance.

The students recommended the following advanced courses to enhance the Civil Engineering curriculum:

1. Smart Cities & Urban Infrastructure
2. Sustainable Construction & Green Buildings
3. Seismic Design & Earthquake Engineering
4. Geotechnical Engineering & Deep Foundation Design
5. Advanced Computational Fluid Dynamics (CFD) in Structural Engineering

COURSE 2: INDUSTRY 4.0 – MECHANICAL ENGINEERING

The course "Industry 4.0" is a forward-looking programme designed for Mechanical Engineering students in the polytechnic domain, aimed at introducing the latest advancements in smart manufacturing and automation. The course equips students with the knowledge to understand and operate intelligent manufacturing systems that are becoming the new standard across industries.

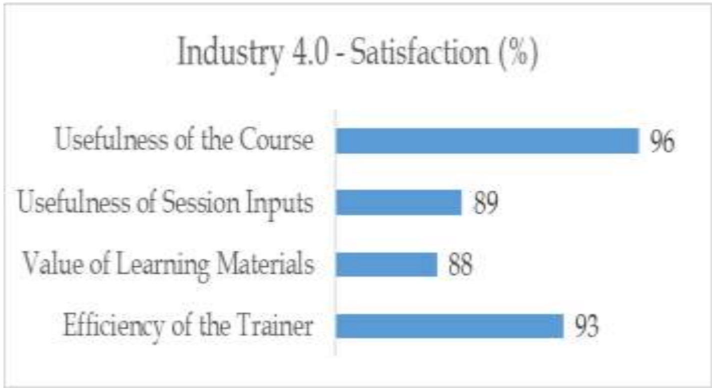
By integrating traditional mechanical skills with digital technologies, students become better prepared for roles in smart factories, maintenance automation, and precision engineering. The course also enhances employability by aligning students' skills with the evolving needs of Industry 4.0-based companies. Evaluating this course is essential to ensure its content remains current, practically applicable, and aligned with emerging industry standards, ultimately helping students transition smoothly into technologically advanced manufacturing environments.

Table 4.9: Perception of Students -Industry 4.0

Industry 4.0– Satisfaction (%)	
Usefulness of the Course	96
Usefulness of Session Inputs	89
Value of Learning Materials	88
Efficiency of the Trainer	93
Mode of session and its Relevance	88
Timing of the Training and its Appropriateness	89

Source: Field Survey – 2024-2025

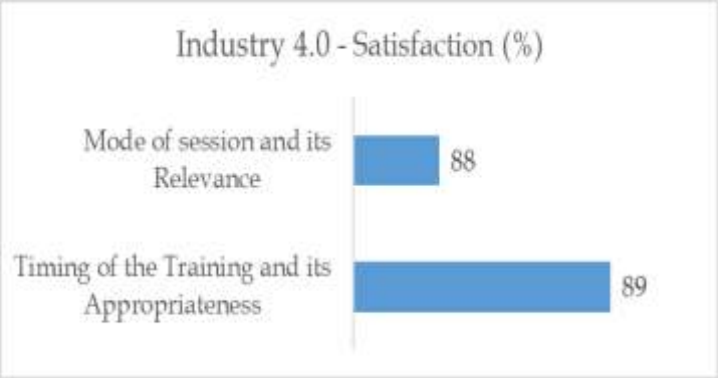
Students across Tamil Nadu shared that they embraced the Industry 4.0 course for its **career relevance**, with 59% stating it exceeded expectations and 37% noting it met expectations, particularly in Coimbatore and Salem of West zone, where exposure to smart manufacturing, automation, and AI-driven processes aligned with industry demands.



In the East zone, particularly in Trichy and Ariyalur district, valuable training was provided to rural students that bridged traditional mechanical engineering with modern industrial technologies. The employability of students was said to have noticeably enhanced through this approach. Feedback was shared by a student, who expressed that *"the connection between old and new engineering methods was clearly explained, and confidence in job readiness was greatly improved."*The course was seen as a key factor in preparing students for today's evolving industrial landscape.

The **session inputs**, rated by 52% of students as exceeding expectations and 37% as meeting expectations, were pivotal in fostering practical insight. In the North Zone, Tirupattur and Villupuram, simulations of assembly-line digitisation clarified Industry 4.0 applications, while sessions in East zone districts at Trichy and Karur used machine learning case studies in quality control to enhance relevance. Valued by 58% of students as exceeding expectations and 30% as meeting expectations, the **learning materials**, including manuals and equipment layout diagrams, were instrumental in sustaining learning, particularly in the Salem and The Nilgiris from West Zone, where students belonging to tribal communities have claimed to have used them for group experiments.

Trainers were highly effective, with 58% of students noting they exceeded expectations and 35% stating sessions met expectations, particularly in the East's Thanjavur and Ariyalur, where students from marginalized community have expressed that they have benefited from real-world examples drawn from local industries. In the Theni and Sivagangai districts of South Zone, rural students valued the clear, interactive teaching approach, while trainers in West zone districts like The Nilgiris, Krishnagiri, Salem, and Dharmapuri conducted engaging live demos for students, and trainers in Tiruvallur of North zone clarified doubts with industry analogies.



The sessions were delivered offline (46%), online (46%), and hybrid (8%) formats and the **sessions** were deemed relevant by 88% of students. The offline sessions as shared by the students in the Tirunelveli and Sivagangai districts of South Zone provided lab-based experimentation. In the West zone, students from The Nilgiris and Krishnagiri districts found the online format accessible, supporting wider reach. This flexibility ensured active

participation, particularly for remote students, enhancing engagement with Industry 4.0 tools. The course's success was further strengthened by its well-aligned scheduling.

Conducted primarily during institution hours, the sessions were considered appropriate by 89% of students, with students in Salem and Coimbatore of West zone districts managing academic commitments effortlessly. East zone rural students, particularly in Karur and Thanjavur districts, benefited from stress-free attendance, ensuring full engagement without compromising academic performance across Tamil Nadu, resulting in improved participation and skill acquisition.

The students suggested the following advanced courses to enhance the Mechanical Engineering curriculum:

1. Additive Manufacturing & 3D Printing
2. Robotics & Automation in Manufacturing
3. Autonomous Vehicles & Electric Propulsion Systems
4. Thermal Systems & Heat Transfer Optimization
5. Nano-engineering & Micro-technology

COURSE 3: PCB DESIGN – ELECTRONICS & COMMUNICATION ENGINEERING

The course "PCB Design" is a hands-on technical program tailored for Electronics and Communication Engineering students in the polytechnic stream. It focuses on the design and development of Printed Circuit Boards (PCBs), which are fundamental components in all electronic devices. This course prepares students for technician-level roles in electronics design, assembly, and testing, as well as further studies in embedded systems and hardware design. As the demand for compact and efficient electronic devices grows, PCB design skills are increasingly valuable in both consumer and industrial electronics sectors. Evaluating this course helps ensure that it remains relevant, application-oriented, and aligned with current industry practices and technological advancements.

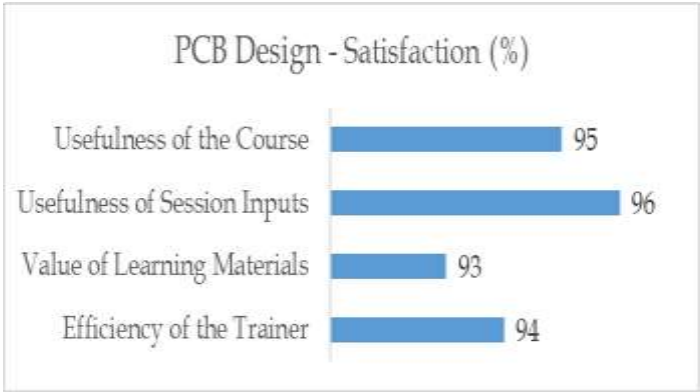


Table 4.10: Perception of Students -PCB Design

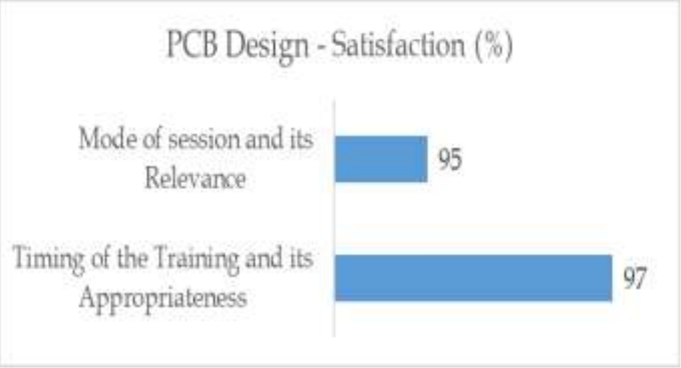
PCB Design – Satisfaction (%)	
Usefulness of the Course	95
Usefulness of Session Inputs	96
Value of Learning Materials	93
Efficiency of the Trainer	94
Mode of session and its Relevance	95
Timing of the Training and its Appropriateness	97

Source: Field Survey – 2024-2025

Students across Tamil Nadu warmly received the **usefulness of the course**, with 59% stating it exceeded expectations and 36% noting it met expectations, particularly in Coimbatore and Krishnagiri's West zone, where clarity on practical applications enhanced core technical skills. In the South zone, particularly in Madurai and Thoothukudi, confidence was gained by students in pursuing internships related to embedded systems and electronics product development.

Job-aligned skills in hardware prototyping and electronics testing were provided by the course, which significantly set to boost the employability in PCB production. Feedback was shared by a rural background student, who mentioned that *"the skills taught were directly applicable to real-world tasks, and my readiness for internships improved greatly."*The training was recognised as instrumental in preparing students for careers.

The **session inputs**, assessed by 51% of students as exceeding expectations and 45% as meeting expectations, played a key role in skill development. In the Villupuram and Tirupattur districts of North zone, interactive assignments with real-life circuit board simulations enriched virtual lab experiences, while East zone students in Trichy and Karur districts benefited from practical design principle examples. These inputs empowered students to conceptualise and simulate PCB layouts, laying a strong foundation for the materials' long-term value.



Fifty eight percentage of the students valued the learning materials as exceeding expectations and 35% as meeting expectations. The **learning materials**, including circuit templates and lab handouts, were crucial for sustained learning. Students particularly in the Ariyalur and Thanjavur districts of East Zone, where rural students have mentioned that they reused them for self-practice. These materials served as enduring technical resources, supporting continuous learning and career goals in electronics.

Trainers were graded as highly effective, with 54% of students noting that they exceeded expectations and 40% of the students stating that the sessions met their expectations, particularly in the Tirupattur and Villupuram districts of the North Zone, where real-time circuit simulation exercises clarified complex logic designs. In the Theni and Sivagangai districts of South Zone, rural students appreciated bilingual instruction and personal guidance during layout and testing phases, while the trainers in the West zone's Coimbatore and Salem districts fostered peer-to-peer learning through doubt-clearing sessions.

The course claimed to have delivered through offline by 48% of the responded students and, online 44% and in hybrid modes 8%.It was deemed relevant by 95% of students, with offline classes in the Tirunelveli and Thoothukudi districts of South Zone providing access to simulation labs, enriching hands-on learning. In the Trichy and Karur districts of East Zone, hybrid delivery enabled rural students to balance online theory with practical institution lab sessions, while students in Chennai and Tiruvallur of North zone benefited from flexible recorded sessions for revision.

Conducted during institution hours (88%), the **sessions** were rated by 61% of students as exceeding expectations and 36% as meeting expectations, with West zone students in Salem and Coimbatore districts appreciating uninterrupted academic routines. In the Theni and Sivagangai districts of South Zone, the schedule reduced commuting burdens, enhancing lab session focus. In the Ariyalur and Trichy districts of East Zone, timely delivery maintained academic consistency, promoting high attendance and reducing fatigue. This thoughtful scheduling enabled students across Tamil Nadu to integrate skill-building with academic commitments, fostering enhanced engagement and outcomes.

> *"The course on Embedded Systems sounded great, but our college didn't have the equipment. We only saw videos – no real practice. How can we be job-ready without labs?"*
>
> - *A Third Year Electrical and Electronics Engineering Student*

The students put forward the following advanced courses to bolster the Electronics & Communication Engineering curriculum:

1. 5G/6G Wireless Technologies
2. Advanced Digital Signal Processing (DSP)
3. VLSI Design & Nano-electronics
4. Optical Communication & Photonics
5. Artificial Intelligence for Communication Networks

COURSE 4: INTERNET OF THINGS – ELECTRICAL & ELECTRONICS ENGINEERING

The course "Internet of Things (IoT)" is a cutting-edge program designed for Electrical and Electronics Engineering students in the polytechnic stream. It introduces students to the concept of connecting physical devices to the internet to collect and exchange data for smarter decision-making. This course enhances hardware and software skills, preparing students for emerging roles in the fast-growing IoT sector. It also lays the groundwork for advanced studies and innovation in embedded systems and automation. Evaluating this course is essential to ensure that it keeps pace with rapid technological developments and provides students with the practical competencies needed to succeed in an increasingly connected and automated world.

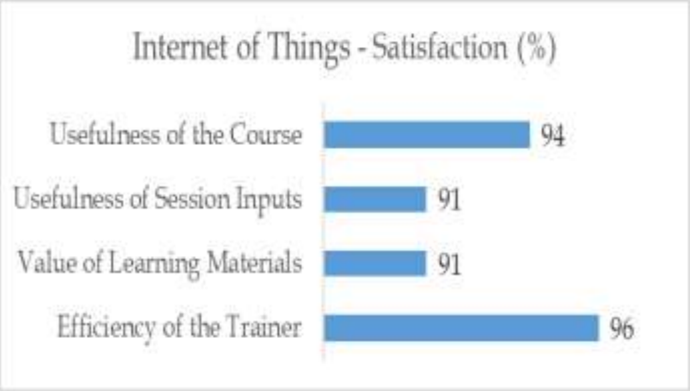
Table 4.11: Perception of Students -Internet of Things

Internet of Things – Satisfaction (%)	
Usefulness of the Course	94
Usefulness of Session Inputs	91
Value of Learning Materials	91
Efficiency of the Trainer	96
Mode of session and its Relevance	96
Timing of the Training and its Appropriateness	91

Source: Field Survey – 2024-2025

Students across Tamil Nadu highly valued the Internet of Things (IoT) course for its **career relevance**, with 61% stating it exceeded expectations and 33% noting it met expectations, particularly in Dharmapuri and Coimbatore districts of West zone, where the training

bridged traditional electrical systems with modern connected technologies, enhancing understanding of smart devices.

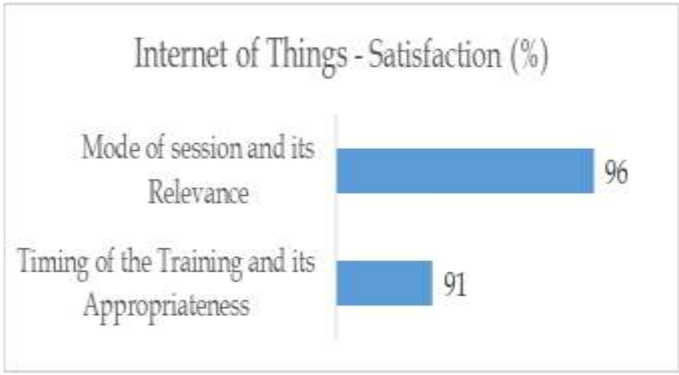


In the South zone, particularly in Thoothukudi and Madurai districts, inspiration was gained by students to pursue mini-projects and internships related to energy monitoring. Skills necessary for these areas were developed through the course materials and sessions. Feedback was shared by a first generation learner, who stated that *"the guidance provided made it possible to confidently take on projects in energy monitoring, which was previously unfamiliar to me."*Meanwhile, in the North zone, students in Chennai and Villupuram were equipped with skills for automation and embedded control roles, further expanding their career opportunities.

The **session inputs**, praised by 57% of students as exceeding expectations and 34% as meeting expectations, were instrumental in deepening practical understanding, with North zone students in Chennai and Villupuram districts benefiting from hands-on demonstrations using development boards to explore wireless communication protocols. Students from the Dharmapuri and The Nilgiris districts of West zone stated that the simulation tools and prototype models simplified concepts for tribal and rural students, fostering practical exposure. Sessions in Trichy and Karur districts of East zone introduced industry-relevant examples, enabling students to build and test basic IoT systems.

Valued by 54% of students as exceeding expectations and 37% as meeting expectations, the **learning materials**, including circuit diagrams, sample codebases, and device interfacing documents, were critical for ongoing learning, particularly in the Karur and Thanjavur districts of East Zone, where students revisited them for project work. In the Krishnagiri and Coimbatore districts of West Zone, students used digital content to replicate IoT setups independently, while South zone students in Theni and Madurai districts applied tutorials to self-paced learning and diploma projects.

Trainers were highly effective, with 56% of students noting they exceeded expectations and 40% stating sessions met expectations, particularly in the Tirupattur and Tiruvallur districts of North Zone, where relatable analogies clarified technical topics. In the Theni, Thoothukudi, and Sivagangai districts of South Zone, rural students appreciated bilingual delivery for understanding programming and sensor interfacing.



Sessions delivered through online (45%), offline (48%), and hybrid (8%) modes, the course was deemed relevant by 96% of students, with offline sessions in the Tirunelveli and Theni districts of South Zone providing access to sensor kits and microcontrollers for hands-on experimentation.

In the Trichy and Karur districts of East Zone, hybrid delivery allowed rural students to balance online theory with in-person labs, while North zone students in Chennai benefited from flexible recorded sessions. This inclusive format ensured accessibility across diverse backgrounds, enhancing engagement with IoT tools. The course's success was further supported by its strategic scheduling.

"The course was useful, but once it ended, I couldn't access the materials again. It would help if we had lifetime access, so we can revise and apply the learning whenever needed."

- A student who completed IoT Course

The **sessions conducted** during institution hours (85%), were rated by 59% of students as exceeding expectations and 32% as meeting expectations, with West zone students in Coimbatore and Dharmapuri appreciating seamless integration with academic timetables. This thoughtful timing ensured maximum participation across Tamil Nadu, allowing students to integrate practical IoT training with academic progression, resulting in enhanced engagement and skill development.

The students suggested the following advanced courses to fortify their career and employability in the Electrical & Electronics Engineering domain:

1. Power Electronics & Renewable Energy Integration
2. Electric Vehicle Power train Design & Battery Management Systems (BMS)

3. Quantum Computing & Quantum Cryptography
4. 5G and Beyond (6G) Communication Systems
5. IoT and Embedded Systems for Smart Grids

COURSE 5: INDUSTRIAL METAVERSE USING AR AND VR – COMPUTER SCIENCE & ENGINEERING / INFORMATION TECHNOLOGY

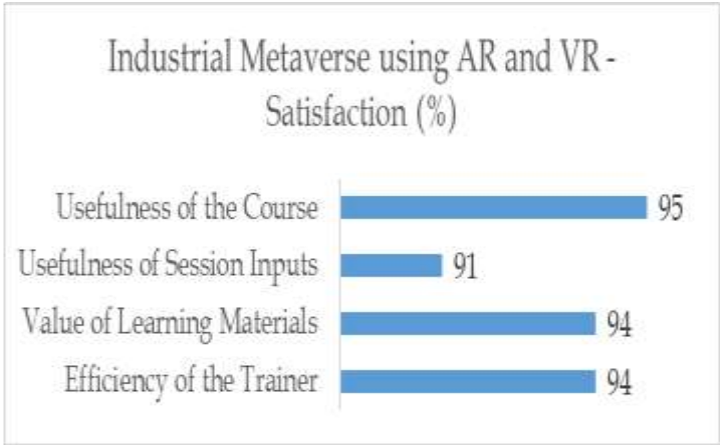
The course "Industrial Metaverse using AR and VR" is an advanced program designed for Computer Science & Engineering and Information Technology students, introducing them to immersive technologies shaping the future of industry. The course enhances creative thinking, 3D visualisation skills, and cross-disciplinary collaboration—key assets in sectors such as smart factories, remote maintenance, and virtual prototyping. With industries rapidly adopting these technologies, the course offers strong future prospects in tech-driven roles.

Table 4.12: Perception of Students -Industrial Metaverse using AR and VR

	Industrial Metaverse using AR and VR – Satisfaction (%)
Usefulness of the Course	95
Usefulness of Session Inputs	91
Value of Learning Materials	94
Efficiency of the Trainer	94
Mode of session and its Relevance	95
Timing of the Training and its Appropriateness	97

Source: Field Survey – 2024-2025

Students across Tamil Nadu enthusiastically embraced the Industrial Metaverse using AR and VR course for its **career relevance**, with 59% stating the contents and delivery of the course exceeded their expectations and 36% noting it met expectations, particularly in Coimbatore and Krishnagiri in the West zone, where the training is opined to have opened pathways to immersive environments and digital technologies.



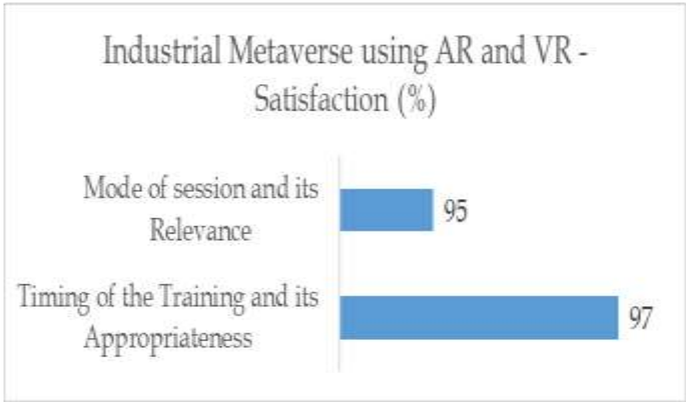
In Chennai and Tiruvallur districts of North Zone, alignment with roles in virtual and 3D environment development was experienced by students, which significantly enhanced

their employability. In the East zone, particularly in Trichy and Karur districts, opportunities in immersive product development were identified by students, positioning them as early adopters in the extended reality field. Feedback was shared by a rural background student explained that *"through the course, skills in virtual environment development were developed, and my confidence in pursuing a career in this emerging field was greatly increased."* The training was seen as instrumental in preparing students for cutting-edge technology roles.

The **session inputs**, acknowledged by 58% of students as exceeding their expectations and 33% as meeting expectations, were pivotal in simplifying complex concepts, with students from South zone especially in Tirunelveli and Sivagangai districts, benefiting from modular learning that broke down AR/VR principles. In Tirupattur and Villupuram districts of North Zone, guided exercises using AR Kit tools enabled students to create basic metaverse experiences, while East zone students (in Trichy and Karur) explored manufacturing and training simulations through real-time examples. These inputs facilitated a smooth transition from coding to immersive content creation, enhancing relevance for digital industries.

Students about 59% valued the **learning materials** as exceeding their expectations and 35% as meeting expectations. They've added that including interactive guides and AR/VR workflow diagrams, had been critical for hands-on practice. This was particularly expressed in the Ariyalur and Thanjavur districts of East Zone. In the West's The Nilgiris and Krishnagiri districts, students from tribal communities used structured handouts for offline study and peer discussions. These resources reinforced theoretical learning and fostered creativity in immersive technology applications.

Trainers were highly effective, 56% of students noting that they exceeded expectations and 38% stating that the trainers' capacity to engage them met their expectations, particularly in the North's Tirupattur and Villupuram, where live modelling sessions showcased industry-based AR/VR solutions. In the Theni and Sivagangai districts of South Zone, bilingual delivery aided rural students' understanding of technical topics. At the same time, Trainers in West zone belonging to Coimbatore and Salem used hands-on demos and team challenges to boost engagement.



Though it's the same course, the content was delivered through different modes in different institutions. As per the responses, the sessions were held in offline mode for 45 per cent of students, while the same percentage (45%) claimed to be had online (45%), and in hybrid mode for 10 per cent of students. The chosen mode of delivery of the course was deemed appropriate by 95% of students. Offline sessions in the Tirunelveli and Sivagangai districts of South Zone were provided with access to VR headsets and simulation labs. This inclusive delivery ensured equitable access to tools, fostering proficiency in immersive technologies. Conducted during institutional hours (88%), the sessions were rated by 57% of students as exceeding expectations and 40% as meeting expectations, with students from Salem and Coimbatore in the west zone claiming that they effectively balanced coursework and upskilling.

In the North zone, particularly in Tiruvallur and Villupuram, the students have claimed to be focused well on their projects. In the East zone, especially in Ariyalur, attendance and academic continuity were boosted by the timely scheduling of sessions. Feedback was shared by a student who mentioned that *"the well-planned timing allowed consistent participation without clashing with other responsibilities, which helped my learning stay on track."* The course structure was recognised as a key factor in supporting student success across these regions. This planned scheduling ensured optimal participation across Tamil Nadu, enhancing outcomes in the demanding field of immersive technologies.

The students proposed the following advanced courses to be added to the Naan Mudhalvan list to enhance their career and employability in the Computer Science & Engineering / Information Technology domain

1. Artificial Intelligence (AI) & Machine Learning (ML)
2. Block-chain & Crypto-currencies
3. Quantum Computing & Quantum Algorithms
4. Cloud Computing & Big Data Analytics
5. Cyber-security & Ethical Hacking

EVALUATING THE PROSPECTS OF THE SCHEME

The evaluation of general prospects of the scheme involves analysing the following heads;

- Perception of employability through the scheme
- Certification and Recognition upon Course Completion
- Perceived Improvement in Placement Opportunities
- Placement and Internship Outcomes through the Scheme

PERCEPTION OF EMPLOYABILITY PROSPECTS

The Naan Mudhalvan Scheme has markedly uplifted employability confidence across Tamil Nadu, with 76% of engineering students and 81% of polytechnic students reporting that participating in the courses has enhanced their job prospects, reflecting its substantial practical impact. In the East zone, first-generation learners of Ariyalur and Karur districts and female students found the structured English and Microsoft Essentials courses pivotal, equipping them for the job market.

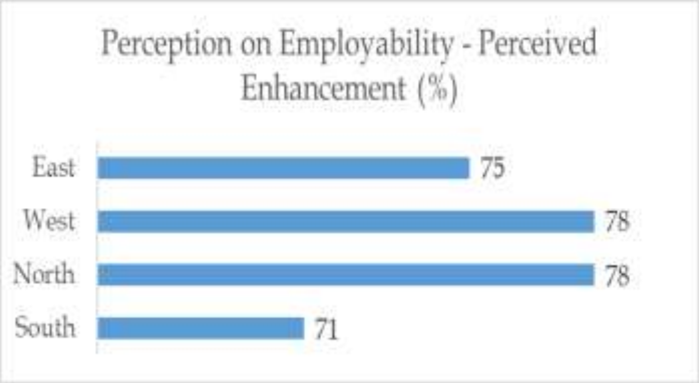
With over 75% expressing confidence, the scheme effectively addressed skill gaps in semi-urban areas, easing the transition from academics to professional goals. Its integration with institution schedules ensured accessibility, fostering readiness state-wide. The scheme's focus on industry-relevant skills is claimed to have set a robust foundation for its impactful session inputs. This widespread confidence among the students highlights the initiative's success in preparing Tamil Nadu's students for diverse careers.

Table 4.13: Perception of Students -Perception on Employability Prospects

Perception on Employability Prospects – Perceived Enhancement (%)	
East	75
West	78
North	78
South	71

Source: Field Survey – 2024-2025

The training mechanism, particularly access to materials and structured guidance, was extremely transformative, with over 78% of West zone students, mostly from The Nilgiris, Dharmapuri, and Krishnagiri districts, reporting enhanced placement confidence, especially among tribal communities.



In the North zone, majority of the students from Tiruvallur, Tirupattur, and Villupuram districts stated that their confidence levels surpassed, as students in Tier II and III towns valued the training's relevance for career planning. South zone students, mostly from Thoothukudi and Kanniyakumari, with 71% expressing satisfaction, noted enhanced articulation through practical course instruction. These inputs bridged theoretical knowledge with workplace demands, ensuring broad applicability across Tamil Nadu. Although 24% engineering and 19% polytechnic students across the zones sought more advanced training, the majority affirmed the program's value. This strong reception underscores the scheme's role in delivering job-ready skills.

The Naan Mudhalvan Scheme's lasting impact is evident in its ability to foster sustained employability across all zones. By enlightening practical expertise and self-belief, it empowered Tamil Nadu's students to excel in job markets. This holistic approach ensured equitable skill development state-wide. The initiative's success in nurturing career-ready students solidifies its transformative role in Tamil Nadu's educational landscape.

CERTIFICATION AND RECOGNITION UPON COURSE COMPLETION

The Naan Mudhalvan Scheme's formal certification for its English and Microsoft Essentials modules, for the students of all years across the domains, was claimed by students as it has significantly enhanced their professional portfolios across Tamil Nadu, with 61% of engineering students and 71% of polytechnic students earning official certificates that boosted their confidence and visibility in job markets.

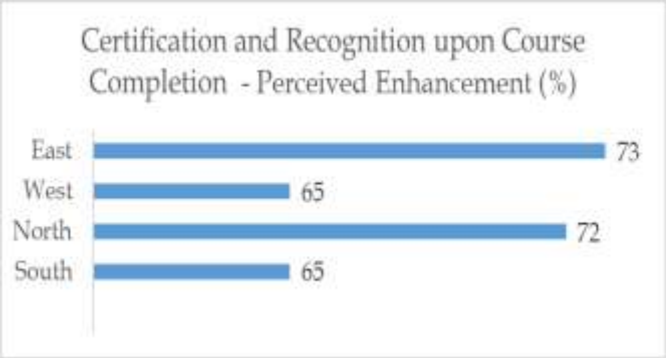


Table 4.14: Perception of Students - Certification and Recognition upon Course Completion

Certification and Recognition upon Course Completion – Perceived Enhancement (%)	
East	73
West	65
North	72
South	65

Source: Field Survey – 2024-2025

In the East zone, mostly from Trichy district, 73% of students received digital certificates, which they valued for tracking progress and showcasing industry-aligned skills on job portals and LinkedIn, particularly benefiting semi-urban learners with limited prior access to such credentials. These certificates provided formal proof of skill acquisition, fostering a sense of professionalism. The scheme's accessible certification process is claimed by faculty members and students to have empowered students to stand out in campus placements, setting a strong foundation for its regional impact.

The certification's impact was profound among the students in the West and North zones, where 65% of students from West zone, mostly from Dharmapuri, The Nilgiris, and rural Salem and 72% of North zone students, mostly from Tirupattur, Villupuram, and Tiruvallur earned certificates, marking a significant milestone for students from tribal communities who lacked prior formal validation beyond academic grades. In the West, this recognition instilled a sense of achievement, enhancing competitiveness in job markets, while North zone students gained an edge in local job fairs and skill competitions.

The students in the South zone, mainly from Madurai and Sivagangai districts, saw 65% of students, predominantly female and rural learners, leverage certificates to strengthen their internship and placement applications. These credentials bridged gaps in recognition, ensuring relevance across Tamil Nadu's diverse regions. Although 39% of engineering and 29% of polytechnic students across the zones faced portal issues or unawareness of download procedures, the majority valued the certification's impact. This strong reception highlights the scheme's role in fostering professional identity.

The Naan Mudhalvan Scheme's certification mechanism has created lasting opportunities, particularly for students in regions with scarce certification opportunities, by reinforcing learning outcomes and employability. By validating skills and boosting confidence, the initiative empowered students to excel in professional settings. This cohesive approach

solidifies the scheme's transformative role in nurturing career-ready students throughout the state.

PERCEIVED IMPROVEMENT IN PLACEMENT OPPORTUNITIES

The Naan Mudhalvan Scheme has significantly enhanced placement readiness across Tamil Nadu, with 79% of engineering students and 83% of polytechnic students reporting improved employability prospects, aligning closely with its goal of industry readiness.

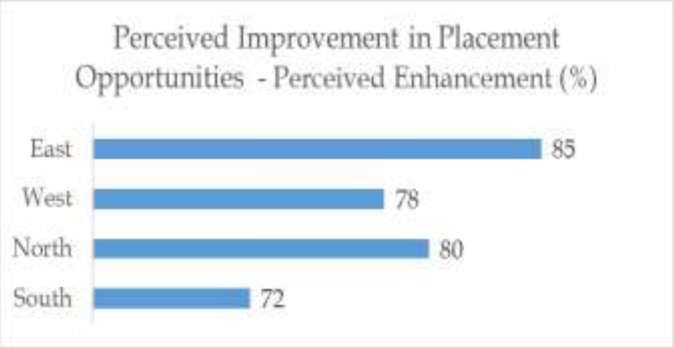
Table 4.15: Perception of Students - Perceived Improvement in Placement Opportunities

Perceived Improvement in Placement Opportunities – Perceived Enhancement (%)	
East	85
West	78
North	80
South	72

Source: Field Survey – 2024-2025

In the East zone, mostly from Thanjavur and Karur districts, 85% of students valued the integration of skill training with academic schedules, boosting their placement opportunities. The scheme's focus on accessible, industry-aligned training laid a strong foundation for its effective outcome. This widespread impact underscores the initiative's success in preparing students of Tamil Nadu for diverse career opportunities.

The session inputs, the notably practical modules and hands-on training, were transformative, with 78% of West zone students, mostly from Coimbatore, Dharmapuri, and The Nilgiris districts, feeling well-prepared for aptitude tests and digital onboarding processes. In the North zone, mostly from Tirupattur and Villupuram, 80% of students noted that they gained a competitive edge in job fairs through real-world scenario-based training. In the South zone, mostly from Theni and Tirunelveli districts, 72% of students, mostly from the scheduled caste communities, credited mock interview sessions and resume-building exercises for opening new employment pathways. These inputs bridged



academic learning with industry expectations, ensuring relevance across Tamil Nadu's diverse regions. While 21% of engineering and 17% of polytechnic students across the zones sought more specialised training, the majority affirmed the program's value. This strong reception highlights the scheme's role in fostering job-ready skills.

The Naan Mudhalvan Scheme's lasting impact is evident in its ability to sustain placement preparedness across all zones. By cultivating practical expertise and confidence, the initiative is acknowledged by the faculty members and students to have empowered Tamil Nadu's students to excel in campus drives and job fairs. This holistic approach ensured equitable skill development across diverse regions. The scheme's success in nurturing career-ready graduates solidifies its transformative role in Tamil Nadu's educational landscape.

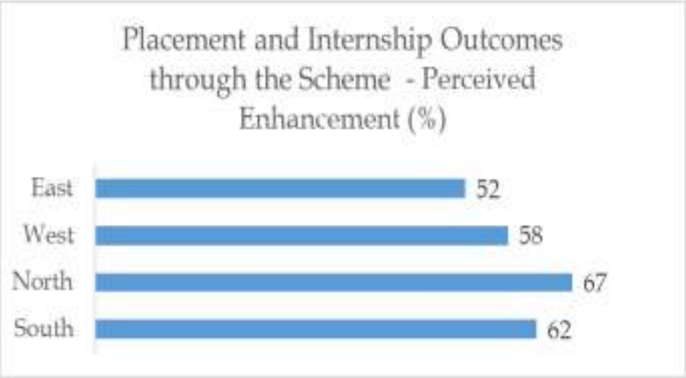
PLACEMENT AND INTERNSHIP OUTCOMES THROUGH THE SCHEME

The Naan Mudhalvan Scheme has delivered tangible job and internship placements across Tamil Nadu, with 57% of polytechnic students and 38% of engineering students securing moderate opportunities through its placement drives, effectively bridging students to the job market. In the East zone, mostly from Trichy and Karur districts, 52% of students secured internships in local MSMEs and tech firms, driven by a job-oriented curriculum and resume preparation. This training aligned their skills with industry needs, particularly in semi-urban areas. The scheme's focus on practical outcomes empowered students to access real-world opportunities, setting the stage for its regional impact.

Table 4.16: Perception of Students - Placement and Internship Outcomes through the Scheme

Placement and Internship Outcomes through the Scheme – Perceived Enhancement (%)	
East	52
West	58
North	67
South	62

Source: Field Survey – 2024-2025



The scheme's placement efforts were significantly impactful in the West and North zones, where 58% of West zone students, mostly from Coimbatore and Salem and 67% of students, mostly from Chennai, Tirupattur, and Villupuram districts of North zone secured internships. 62% of students, mostly from the Theni, Sivagangai, and Kanniyakumari districts of South zone, secured placements in small and medium firms, with some students assured with start-up internships.

These outcomes connected academic training to practical roles, ensuring relevance across Tamil Nadu's diverse landscapes. Although 62% of engineering and 43% of polytechnic students across the zones awaited placements, they valued enhanced interview readiness, signalling future potential. This regional progress highlights the scheme's ability to create meaningful career pathways.

Even though the Naan Mudhalvan courses are helping us gain technical skills, there are hardly any companies nearby to apply those skills. In Thoothukudi, we finish the training but end up searching for jobs in other districts. We need more local industry tie-ups or support for starting something on our own.

- *A final year engineering student from Thoothukudi*

The Naan Mudhalvan Scheme's placement and internship outcomes have created lasting opportunities, particularly for students from rural and tribal areas, fostering equitable access to employment across Tamil Nadu. By building practical skills and industry networks, the scheme empowered Tamil Nadu's students to secure opportunities in job fairs and campus drives. The initiative's focus on tangible outcomes solidifies its transformative impact on Tamil Nadu's educational and employment landscape.

IMPACT OF FACULTY DEVELOPMENT PROGRAMME UNDER NAAN MUDHALVAN SCHEME

The Faculty Development Programmes (FDPs) form a critical component of the Naan Mudhalvan Scheme (NMS), designed to capacitate faculty members across higher education institutions in Tamil Nadu. By preparing faculty ahead of the students' learning cycle, FDPs ensure that teaching staff are not only aligned with course content but also empowered to act as mentors for students beyond the formal training hours.

1. Strengthening Institutional Capacity

FDPs serve as an institutional capacity-building intervention. By equipping faculty with industry-relevant knowledge and skill sets, they reduce dependence on external trainers. Faculty participants noted that learning the same content ahead of their students fostered a sense of ownership of the course, thereby enhancing their motivation to guide and mentor effectively. This alignment ensures continuity of learning within the institution, particularly for project-based and applied learning components.

2. Relevance to Industry and Emerging Domains

Faculty members consistently highlighted the value of FDPs in updating their domain knowledge and industry alignment:

- One participant from the west zone on pointed out that the CATIA software training was particularly impactful, exposing them to the latest industry tools that they might not have explored otherwise due to syllabus rigidity and time constraints.
- Another faculty member emphasised the Industry 4.0 modules, appreciating that the training introduced them to cutting-edge developments nearly in sync with the industry's own adoption pace. Such exposure ensures that faculty act as bridges between industry expectations and academic preparation, directly benefiting students.

3. Mentoring and Student Support

The FDPs equip faculty to mentor students effectively outside of formal NMS sessions. Teachers reported that the training allowed them to guide students on project work and applied learning tasks. However, some expressed concern that certain FDP modules were content-heavy and fast-tracked, leaving limited room for in-depth comprehension. This can, in turn, reduce the faculty's ability to extend nuanced mentoring support back in their institutions.

4. Operational Challenges

While the FDPs have shown significant positive outcomes, several implementation gaps remain:

- **Timing and Scheduling**: FDPs are ideally conducted before the semester begins. However, irregular scheduling and delayed communication have sometimes clashed with the faculty's regular college responsibilities, limiting participation.
- **Trainer Preparedness**: Faculty stressed that trainers conducting FDPs need to be highly competent and industry-aware. Weak facilitation can undermine the FDP's purpose, leaving faculty underprepared to mentor students.
- **Learning Environment**: Some faculty reported that accelerated coverage of vast content limited meaningful engagement. This issue indicates the need for pacing and modular design.

5. Recommendations for Strengthening FDPs

To enhance the long-term impact of FDPs, faculty participants and institutional stakeholders suggested:

- **Advance Communication**: Ensure FDP schedules are communicated well before the semester begins to enable planning and maximum participation.
- **Mandatory Industry Exposure**: Incorporate field and industry visits into all FDPs to ground theoretical knowledge in real-world practice.
- **Certification and Recognition**: Link FDP certificates to faculty appraisal, grading, and promotions to incentivise participation and professional growth.
- **Trainer Quality**: Strengthen trainer selection and preparation to ensure high-quality delivery.
- **Modular and Flexible Design**: Avoid content overload by breaking programmes into modular units with adequate time for faculty to internalise and apply learning.

6. Overall Impact

The FDPs under the Naan Mudhalvan Scheme are widely acknowledged by faculty as a **transformative intervention**. They not only bridge the gap between academia and industry but also position faculty as active mentors capable of supporting students in their career readiness journey. Despite operational challenges, the intent and design of FDPs—capacity-building, sustainability of student learning, and strengthening institutional resources—make them a cornerstone for ensuring that the scheme has a lasting, systemic impact on higher education institutions in Tamil Nadu.

STAKEHOLDER PERCEPTIONS – SPOCS, TRAINING PARTNERS AND EMPLOYERS

PERCEPTION OF SINGLE POINT OF CONTACTS (SPOCS) OF INSTITUTIONS

SPOCs from institutions across the zones expressed that the Naan Mudhalvan Scheme has been a turning point, especially for female, economically backward and tribal students, many of whom had not previously been exposed to industry-aligned digital training. They reported that these students gradually developed confidence, particularly due to the scheme's **inclusive pedagogy and accessible language options**. Rural students responded well to the hybrid format, which allowed them to learn without the pressure of commuting or relocating. Several SPOCs shared how students, once hesitant, began actively engaging in **digital literacy**, often volunteering as team leads during assignments. According to them, the scheme not only delivered skills but nurtured aspirations, with many students now preparing for placement opportunities they once deemed unreachable.

SPOCs consistently reported that students from rural and marginalized communities, many of whom initially faced challenges with digital literacy, adapted quickly due to the scheme's structured modules, personalised attention, and continuous feedback. The program's inclusive pedagogy, accessible language options, and localised examples made the content relatable, particularly for rural students from farming communities who found the training relevant to **real-world job opportunities**. This practical relevance significantly improved retention, enthusiasm, and course completion rates across the state.

The hybrid format of the scheme was particularly effective for rural students, allowing them to learn without the pressures of commuting or relocating. SPOCs highlighted that **hands-on lab experiences** compensated for limited access to technology at home, enabling notable progress, especially in creative and design-based modules. Career mapping sessions were also a key feature, helping students visualise pathways beyond traditional jobs and inspiring them to pursue internships and freelance opportunities.

Female students, including many first-generation learners, experienced profound transformation through the scheme. SPOCs noted that these students gained confidence through flexible learning formats, personal mentoring, and the presence of female mentors and trainers. Many female students actively engaged in coding modules, AI-based tasks, and group assignments, often taking on leadership roles. The scheme empowered them to feel **professionally visible and included**, with many now preparing for placement opportunities they once considered unattainable.

The success of the scheme, as per SPOCs, lies in its **flexibility, local relevance, sustained mentorship, and supportive learning environment**. By addressing the unique needs of diverse student groups, the program has not only delivered critical skills but also fostered a sense of aspiration and inclusion, significantly boosting morale and preparing students for a competitive job market.

PERCEPTION OF TRAINING PARTNERS TOWARDS THE NAAN MUDHALVAN SCHEME

Training partners perceive the Naan Mudhalvan Scheme as a highly effective and scalable model for skill development, distinguished by its **structured framework and alignment with industry needs**, setting it apart from similar programs in other Indian states. They commend the scheme's 60-hours training modules, which surpass many university-level initiatives in depth, delivering high-quality instruction comparable to Tier 1 institutions and fostering a well-organised learning environment with comprehensive materials and regular assessments. The involvement of **Standard Industry Professionals (SIPs)** ensures that courses in fields remain cutting-edge, equipping students, primarily from Tier 3 and rural institutions, with practical, in-demand skills that enhance employability and enable freelance opportunities.

Training partners also value the scheme's **inclusive approach**, which removes financial barriers for economically disadvantaged students and supports diverse learners through internships and hackathons, fostering innovation and real-world problem-solving. The dynamic feedback system and regular meetings conducted by Tamil Nadu Skill Development Corporation (TNSDC) are seen as critical for maintaining responsiveness, ensuring continuous improvement, and aligning training with the evolving demands of the digital economy, as evidenced by the scheme's replication in neighbouring states like Karnataka and Odisha.

Despite its strengths, training partners identify operational challenges that require refinement to sustain the scheme's impact.

- Rapid technological advancements pose difficulties for trainers, necessitating ongoing upskilling to keep pace with industry trends.
- Infrastructure issues at institutions, though reported to the TN Skill Development Corporation, demand more effective resolution to ensure seamless delivery.

- The Training Partners note that inconsistent adherence to training schedules and inadequate communication from institutions, particularly those opting out after gaining autonomous status, create logistical hurdles.
- Additionally, language barriers in some districts, where students struggle with English-medium classes, highlight the need for enhanced bilingual support.
- Low student enrolment in certain institutions underscores the need for better utilisation of resources.
- Nevertheless, training partners view the scheme as a transformative initiative, bridging the digital divide, boosting placement outcomes, and setting a national benchmark for inclusive, industry-aligned skill development through its robust curriculum and stakeholder collaboration.

The Training Partners recommend several strategic enhancements to strengthen its implementation and impact, emphasising improved coordination, infrastructure, and students' engagement.

- They propose issuing certificates to Single Points of Contact (SPOCs) who complete the training program to formally recognise their role, enhancing their professional credentials and reinforcing accountability in institutional skill development.
- Designating a full-time senior faculty member, instead of junior or ad hoc staff, as SPOCs would streamline communication and coordination, ensuring efficient program execution.
- Upgrading institutional infrastructure, particularly computer systems and internet connectivity, is deemed essential to support high-quality digital learning in blended environments.
- Training partners also expect that communicating training schedules at least one week in advance to allow adequate preparation, alongside adopting a hybrid delivery format to increase accessibility and accommodate diverse learning preferences.
- Incorporating student preferences in course assignments and integrating career guidance into the framework are recommended to boost engagement, motivation, and alignment with long-term employability goals, positioning the scheme as a more responsive and learner-centred model for skill development.

PERCEPTION OF EMPLOYERS TOWARDS NAAN MUDHALVAN SCHEME

Employers, the representatives of the employing organisations of student beneficiaries of the Naan Mudhalvan Scheme, perceive it as a highly effective initiative that significantly enhances workforce readiness and aligns with industry demands. They commend the scheme's industry-aligned training modules, which foster hands-on practical skills and boost students' self-confidence, enabling them to excel in both academic and professional settings. Employers note measurable improvements in technical proficiency and conceptual understanding, particularly among students from Tier II cities, who display increased motivation and positive attitude post-training, as evidenced during on-the-job training in the industries.

"From our experience, students who have undergone courses under the Naan Mudhalvan Scheme are far better prepared when they join the workforce. Unlike earlier, where we had to spend considerable time and money on bringing fresh recruits up to speed, these students already possess the basic technical knowledge and workplace competencies. As a result, they require significantly less induction and training. This not only reduces the cost of training for the company but also allows the students to start contributing productively much sooner. In our view, the NMS courses have helped narrow the gap between academia and industry by aligning student learning with real-world job expectations."

The scheme's strategic framework and robust execution, marked by strong industry-academia linkages, facilitate seamless onboarding, as graduates arrive with foundational knowledge in job-relevant technologies, reducing training costs and accelerating integration into the workforce. Employers also highlight the scheme's role in fostering career clarity, enabling students to make informed decisions about their professional futures, which translates into higher job performance and sustained employability compared to peers from other states, positioning Tamil Nadu as a hub for competitive talent.

Despite its successes, employers identify areas for improvement to maximise the scheme's impact.

- They suggest that educational institutions should further leverage the scheme to enhance student exposure, particularly in Tier III cities, to promote long-term career growth perspectives.

- Integrating deeper insights into core industry domains and strengthening soft skills and communication training would better equip students for interpersonal workplace demands.
- Employers also recommend enhanced monitoring and guidance to ensure optimal utilization of the scheme's benefits, maintaining its intended impact.
- Additionally, supporting employers with strategies for candidate retention, such as improved onboarding and engagement practices, could address job turnover and enhance workforce stability.

Employers view the Naan Mudhalvan Scheme as a transformative initiative that significantly enhances student employability, but they emphasize several recommendations to further strengthen its impact.

- The employers advocated for continuous upskilling of faculty in emerging technologies to ensure instruction aligns with current industry practices, enhancing student learning outcomes and maintaining the scheme's relevance in a rapidly evolving job market.
- Targeted support, such as specialized workshops and language labs, is recommended to bolster communication skills for rural students, promoting equitable participation and improving their competitiveness in professional settings.
- Employers also stressed the importance of promoting admissions to polytechnic institutions to meet the growing demand for technically proficient professionals, recognizing these institutions as critical in bridging the skills gap.
- Additionally, incorporating advanced technology modules in later semesters and fostering a lifelong learning mindset through self-learning platforms and workshops would prepare students for complex, real-world applications and ensure adaptability, aligning with global industry standards.

To further optimize the scheme's outcomes, employers suggest practical enhancements to align training with employment needs.

- Providing comprehensive job descriptions before interviews would help students make informed career choices, ensuring better job-role compatibility and satisfaction.

- Integrating cultural awareness and personal values into the curriculum is seen as essential for holistic development, fostering workplace adaptability and social responsibility.
- Employers also recommended that the Directorate of Technical Education (DOTE) consider a minimum post-employment service period to maximise the return on employer-provided training, enhancing workforce stability.
- Formal allocation of time for internships within academic schedules is proposed to ensure meaningful industry exposure without disrupting studies.
- Finally, sustaining faculty engagement through incentives, recognition, and a systematised approach to ongoing professional development would maintain instructional quality, ensuring the scheme continues to produce industry-ready graduates.

Overall, employers view the Naan Mudhalvan Scheme as a transformative model that not only bridges the gap between education and employment but also sets a benchmark for industry-aligned skill development, with potential for further refinement to sustain its impact.

5. MAJOR FINDINGS OF THE EVALUATION

The following are the findings of the study based on the evaluation made among the stakeholders, namely students, Single Point of Contacts, Training Partners and the Employers, which is presented as follows;

- **Enhanced Employability Confidence**

  The Naan Mudhalvan Scheme's courses, both Common Skilling and Domain Specific Courses of Engineering and Polytechnic, have significantly boosted student confidence, with 76% of engineering and 81% of polytechnic students across Tamil Nadu reporting improved job prospects, equipping them with practical skills for diverse career paths, especially in rural areas.

- **Industry-Aligned Certifications**

  The scheme's formal certification process for its courses has empowered students by enhancing their professional portfolios, with 61% of engineering and 71% of polytechnic students earning digital certificates that increase their visibility on job portals and professional social networking platforms like LinkedIn, particularly benefiting first-generation and rural students.

- **Improved Placement Readiness**

  Courses under the Naan Mudhalvan Scheme have significantly enhanced placement preparedness, with 79% of engineering and 83% of polytechnic students reporting improved employability prospects, driven by practical modules and resume-building exercises that align with industry expectations.

- **Tangible Internship and Placement Outcomes**

  The scheme's job-oriented curriculum, including hands-on training, has facilitated meaningful career opportunities among the polytechnic and engineering students, who have secured internships and placements in MSMEs and tech firms.

- **Equitable Skill Development across Regions**

  By integrating courses with academic schedules and focusing on industry-relevant skills, the scheme has fostered equitable skill development state-wide, noting enhanced career readiness, ensuring broad applicability for diverse communities, including tribal and female students. This is especially true of students in industrially backward regions, where it is difficult for students to get introduced to industry practices.

- **Delivery Mode and Infrastructure Challenges**

  Across the state, the reliance on online delivery for common skilling and a few domain-specific courses has presented notable challenges, particularly due to inconsistent connectivity with online portals, especially in rural districts. Limited access to stable internet and inadequate infrastructure disrupts seamless participation in courses, often forcing students to rely on recorded sessions, which limits real-time interaction and feedback critical for mastering skills.

- **Limited Hands-On Practice in Rural Areas**

  Despite the high satisfaction rates across the courses, a significant challenge persists in providing adequate hands-on practical experience, particularly for students in rural districts. Urban centres, such as Coimbatore and Chennai, benefit from hybrid delivery modes that incorporate lab-based demonstrations, enabling robust engagement with industry tools, but rural students from Tier II and Tier III areas face barriers due to limited access to specialised software and hardware. This constraint restricts their ability to apply theoretical knowledge practically, diminishing the depth of skill acquisition in the specialized courses.

- **Inconsistent Trainer Pacing for Complex Topics**

  Regardless of trainers being highly praised, feedback indicates inconsistent pacing, particularly in rural and tribal-dominated districts. The rapid delivery of technical jargon and complex simulations often overwhelmed first-generation learners, leading to incomplete comprehension and reduced retention of advanced concepts critical for roles in sustainable technologies and software development. Additionally, some rural students noted that trainers occasionally lacked expertise in advanced topics, resulting in less interactive sessions that limited real-time engagement.

- **Challenges in Trainer Upskilling amid Rapid Technological Advancements**

  The rapid pace of technological advancements in fields covered by the Naan Mudhalvan Scheme, presents significant challenges for trainers across Tamil Nadu. Trainers/Instructors, particularly in rural districts, struggle to stay updated with cutting-edge industry trends due to limited access to continuous professional development opportunities. This gap in upskilling leads to inconsistencies in delivering advanced topics, with some trainers relying on outdated case studies or simplified explanations that fail to reflect current industry standards, potentially reducing the course's relevance for students aiming for roles in tech-driven sectors.

- **Persistent Infrastructure Issues Hindering Seamless Delivery**

  Infrastructure challenges at institutions across the state remain a critical barrier to the effective delivery of the courses of the scheme. In rural areas, inconsistent internet connectivity and inadequate lab facilities, such as outdated computers or low-configured computers not compatible with the software of the course, disrupt the training sessions, forcing students to rely heavily on simulation videos, which limit interactive learning and real-time feedback. The lack of robust infrastructure upgrades risks perpetuating inequities, especially for economically disadvantaged students, and diminishes the scheme's potential to deliver equitable, high-quality skill development across the state.

- **Logistical Hurdles Due to Inconsistent Scheduling and Communication**

  The logistical challenges in the scheme stem from inconsistent adherence to training schedules and poor communication from institutions. This lack of alignment creates confusion, with some institutions failing to provide timely updates on student availability or infrastructure readiness, leading to delays or cancellations of critical lab-based sessions.

6. OPERATIONAL CHALLENGES

While the overall evaluation yielded the student perception towards the scheme, it is equally important to acknowledge the operational challenges that the scheme encounters during its execution. This section outlines the key logistical, infrastructural, and pedagogical challenges faced on the ground, offering insight into the practical realities that influenced the delivery and effectiveness of the sessions across diverse regions. The following are the few operational challenges that the scheme face in the course of its effective functioning;

HUB INSTITUTION CHALLENGES

- When an institution lacks the minimum required enrolment of 60 students for a course, students must travel to another institution (Hub) to combine with other learners from various institutions, creating logistical complexities.
- This inter-institutional mobility poses challenges such as inadequate transportation options, particularly for students in rural areas, leading to increased costs and time burdens. For students from remote villages, it leads to fatigue, reduced attendance, and disengagement, particularly for female students who may face logistical difficulties.
- Knowledge gaps between students from different institutions hinder collaborative learning, as varying academic backgrounds and preparation levels can affect course comprehension.
- Host institutions lack sufficient infrastructure, such as classrooms, laboratories, or digital resources, to accommodate additional students, compromising the learning experience.

TRAINERS WITH LIMITED SKILLS

- In few rural institutions, trainers exhibit limited expertise, which can undermine the quality of training and the scheme's goal of industry-relevant skill development.
- The massive scale of the scheme, covering thousands of students across Tamil Nadu, places significant pressure on training partners to recruit and deploy qualified trainers uniformly across urban and rural regions.

- Limited expertise from the trainers may risk uneven learning outcomes, particularly in technical courses, where hands-on expertise is critical for student success.

ACADEMIC SCHEDULING

- Integrating the scheme's courses into students' regular academic schedules requires meticulous advance planning to avoid disruptions to core curricula, which is critical for maintaining student engagement and institutional support.
- While most institutions manage scheduling effectively, isolated cases of overlap or conflicts with academic commitments that leads to reduced participation or stress among students.
- Inconsistent scheduling practices and poor communication across few institutions disproportionately affect students in rural or under-resourced institutions, where flexibility is limited. Further, the courses can be taught from basic to advanced levels to induce interest among the students that necessitates clear communication and coordination.

FACULTY DEVELOPMENT PROGRAMS

- Faculty development programs (FDPs) for faculty coordinators and SPOCs are highly valued for enhancing their capacity to support the scheme, but logistical challenges, including accommodation and communication, hinder their effectiveness, particularly for female faculty.
- Long-distance travel to FDP venues poses significant barriers, especially for women faculty who cite logistical difficulties and family responsibilities.
- The long-distance nature of FDPs may exclude faculty from remote institutions, as long-distance travel requirements limit their ability to participate effectively, reducing grassroots coordination and overall scheme implementation.

WEB PORTAL AND DATA CONNECTIVITY ISSUES

- The scheme's web portal presents usability challenges, with students reporting difficulties in downloading certificates upon course completion, which undermines the recognition of their achievements.
- The feedback mechanism and grievance redressal on the web portal are perceived as complex for the students, as they do not provide valuable insights that could improve the scheme's implementation.

- Technical glitches affect students with limited digital literacy, particularly those in rural and tribal areas, reducing their engagement.
- This may erode trust in the scheme's administrative efficiency, as timely access to certificates is critical for employability.
- The training programmes have been planned for a particular duration for all the students belonging to a discipline, two or more of institutions. The online mode of training posed challenges to the institutions and to the students. Most of the rural private institutions does not have adequate IT infrastructure for engaging all the students at the same time. This situation has prompted the students to spend financial resources to have high-end gadgets with required data connectivity.

7. RECOMMENDATIONS OF THE EVALUATION

In light of the insights gathered through the evaluation process, this section presents a set of actionable recommendations aimed at enhancing the effectiveness of the scheme. These suggestions are grounded in observed challenges and stakeholders' feedback, to strengthen infrastructure, improving the content delivery, and ensuring that the learning experience remains relevant and impactful across diverse educational and socio-economic contexts.

The following recommendations are provided based on the evaluation of the scheme;

- **Enhance Rural Connectivity and Digital Infrastructure**

  To address the inconsistent connectivity issues disrupting online delivery in rural districts, the scheme may prioritise partnerships with telecom providers to deploy 5G-enabled infrastructure and high-speed internet in Tier II and Tier III areas. Establishing state-of-the-art digital labs equipped with modern computers and course-specific software will ensure seamless access to online portals and reduce reliance on recorded sessions. This comprehensive upgrade to connectivity and infrastructure will enhance course effectiveness, minimise dropout risks, and empower rural students to compete in professional fields.

- **Expand Access to Hands-On Tools and Labs**

  To overcome the limited hands-on practice opportunities in rural areas, the scheme may invest in labs equipped with industry-standard tools targeting rural and tribal areas. Collaborating with industry partners to provide dedicated software licenses and hardware for courses will ensure equitable access to practical training. Regular audits of lab facilities in rural institutions will identify and address resource gaps, enabling robust engagement with technical applications. By enhancing hands-on learning, this recommendation will strengthen skill acquisition, boost employability, and build confidence among rural students for real-world projects and internships.

- **Promote Localised Lab Enhancements**

  To address infrastructure disparities impacting hands-on practice, the scheme may establish regional Centres of Excellence (CoEs) in Tier II and Tier III cities. These CoEs will provide access to specialised tools, reducing resource-sharing constraints in rural institutions. Collaborating with local industries to maintain and

update lab equipment will ensure alignment with market needs. By promoting localised lab enhancements, the scheme will empower rural students with practical skills, boosting their employability and supporting Tamil Nadu’s economic growth.

- **Subsidise Resources for Economically Disadvantaged Students**

  To alleviate the financial burden of acquiring gadgets for rural and tribal students, the scheme may introduce a subsidy program providing affordable devices and internet packages, targeting economically disadvantaged students in Tier II and Tier III areas. Partnerships with NGOs, CSR Foundations and corporate sponsors to fund the distribution of pre-loaded tablets and Wi-Fi dongles, ensuring access to course materials. Establishing community tech centres in rural areas will provide shared access to high-quality devices for students unable to afford personal equipment. This initiative will reduce barriers to participation, enhancing inclusivity and competitiveness in professional fields.

- **Standardize Trainer Pacing for Inclusive Learning**

  To address inconsistent pacing that overwhelms first-generation learners in rural and tribal areas, the scheme may implement a standardized trainer pacing framework tailored to diverse learning needs. Mandatory workshops focusing on adaptive teaching strategies for complex topics will equip trainers to deliver content at an accessible pace. Incorporating student feedback mechanisms to monitor pacing effectiveness will ensure continuous improvement in course delivery. This structured approach will enhance comprehension and retention of advanced concepts, aligning with the goal of preparing students for emerging technical careers.

- **Strengthen Trainer Expertise in Advanced Topics**

  To mitigate the lack of expertise in advanced topics reported in rural districts, the scheme may launch a state-wide Training of Trainers – a trainer upskilling program with certification courses focusing on cutting-edge fields. Partnerships with global tech firms will provide trainers access to the latest industry trends, ensuring relevant delivery of courses. Incentives, such as stipends and recognition, will encourage participation, particularly for rural educators. By enhancing trainer expertise, this initiative will improve session interactivity and depth, equipping students with skills aligned with modern industry standards.

- **Inculcating Entrepreneurial Skills**

To introduce entrepreneurship related courses to encourage the students to become tech-based entrepreneurs by establishing ventures in the new, emerging and knowledge-based sectors.

- **Streamline Scheduling Through Unified Coordination**

  To address logistical hurdles from inconsistent scheduling, the scheme may develop a cloud-based scheduling platform integrated with institutional academic calendars, ensuring seamless alignment of training sessions. The scheduling may be done well ahead of the academic classes started every year. Regular communication protocols, including mandatory updates on student availability and infrastructure readiness, will prevent delays in lab-based sessions. This streamlined scheduling system will enhance student participation and course completion rates, supporting the scheme's inclusive skill development objectives.

- **Enhance Communication between the Institutions and Training Partners**

  To tackle poor communication between institutions, the scheme may establish regional coordination hubs to facilitate real-time communication between Training Partners and Institutions. Implementing a digital dashboard for institutions to report scheduling and resource updates will improve transparency and reduce session cancellations. Training institutional staff in collaborative protocols will strengthen partnerships and ensure consistent delivery. This enhanced communication framework will minimize logistical disruptions, fostering a cohesive training ecosystem across Tamil Nadu.

- **Ensuring Participation of Autonomous Institutions**

  To accommodate the socially and economically diverse students studying in the autonomous institutions, the Naan Mudhalvan Scheme can explore the possibilities of those autonomous institutions expressing the willingness to enroll in the scheme.

8. CONCLUSION

Tamil Nadu's Naan Mudhalvan Scheme is redefining skill development through its commitment to student welfare, economic prosperity, and future-ready education. Unlike other state programs that often focus on urban or sector-specific training, this scheme's subsidized, vernacular courses, delivered in Tamil, ensure inclusivity for rural, marginalized, and first-generation learners, breaking linguistic and socio-economic barriers. By integrating an industry-aligned syllabus, developed in collaboration with giants like Microsoft and Infosys, the scheme equips students with market-relevant skills such as coding, data analytics, and professional communication, reducing the need for post-hiring training. This enhances student employability, enabling them to secure roles in high-demand sectors like IT, automotive, and electronics, fostering confidence and career sustainability. The scheme's ability to create a skilled workforce attracts investment, drives innovation, and positions the state as a leader in India's knowledge economy, offering a competitive edge over less inclusive model.

The scheme significantly enhances skill development, offering a tech-driven curriculum that includes technical proficiencies and soft skills, preparing students for holistic professional success. Events like hackathons and Niral Thiruvizha further amplify opportunities by showcasing students' technical and creative abilities to industry recruiters, fostering innovation, teamwork, and visibility. These platforms provide direct access to jobs, internships, and mentorship, particularly benefiting students from marginalized backgrounds who lack traditional networks. These initiatives strengthen industry-academia linkages, reducing brain drain and establishing the state as a talent hub. The scheme's focus on vernacular training ensures accessibility, empowering rural student to contribute to their communities, while the broader curriculum supports diverse industries, from technology to manufacturing, driving economic diversification and sustainable growth.

By extending training to Tier II and Tier III regions, the Naan Mudhalvan Scheme promotes regional development and balance, reducing urban-rural disparities and fostering equitable growth. Students in non-metropolitan areas gain access to localized training aligned with regional industry needs enabling them to secure local employment and uplift their communities. This balanced development attracts industries to underserved areas, boosting local economies and creating job opportunities across the state. Investments in

rural infrastructure, such as skill labs and innovation hubs, further support this vision, ensuring that students in remote areas receive high-quality training, contributing to the state's inclusive prosperity and economic resilience.

To sustain its transformative impact, the scheme must address challenges like placement gaps, particularly for engineering students, by strengthening industry linkages and expanding rural infrastructure. Continuous alignment with global and regional career trends, through partnerships with industry associations and regular syllabus updates, will maintain relevance, preparing students for emerging fields like artificial intelligence and green energy. The scheme's success has inspired other states to explore similar vernacular, inclusive models, cementing its role as a national benchmark. By fostering equity, employability, and economic advancement, Naan Mudhalvan uplifts Tamil Nadu's student, promising sustained prosperity and global competitiveness. Through its commitment to equity, employability, and economic advancement, the scheme not only uplifts Tamil Nadu's student but also sets a scalable framework for India's skill development ecosystem, promising sustained prosperity and global competitiveness.

REFERENCES

- Policy Notes of Government of Tamil Nadu
- Naan Mudhalvan Portal: https://naanmudhalvan.tn.gov.in/
- Tamil Nadu Government Vision Document: https://www.tn.gov.in/
- TNSDC Portal: https://www.tnskills.tn.gov.in/
- Annual Survey of Industries 2021-22 (cited for gender statistics).

APPENDICES

1: WORK PLAN

Timeline	Tasks	Activities
Month 1	**Planning and Preparation**	Planning and allocating resources for survey and logistics.
		Analysing existing data and perform secondary research.
		Sensitizing the stakeholders (Students, Faculty Recruitment Agencies, Placement Cells, Industry Representatives, Trainers, Project Coordinators and Government Officials).
Month 2	**Study Design and Pilot Testing**	Drafting and Testing Survey Instrument.
		Conducting Pilot Study to Validate Tools.
		Finalizing Data Collection Tools (online/offline).
Month 3	**Data Collection and Validation**	Collecting Survey Responses from Participants.
		Submitting Interim Report to SPC
Month 4		Conducting Key Informant Interviews (KIIs) and Focus Group Discussions (FGDs) with key stakeholders.
		Verifying and Validating Data for Accuracy.
Month 5	**Data Analysis and Reporting**	Analyzing the data using Qualitative and Quantitative methods.
		Drafting the Findings and Identify Actionable Insights.

Month 6	**Report Writing and Dissemination**	Preparing Detailed Reports with Findings, Methodologies, and Recommendations.
		Printing and Submission of the Report.

2: SAMPLE ENGINEERING INSTITUTIONS

Zone	District	Tier	College
East	Ariyalur	Tier 3	Nelliandavar Institute of Technology
			University College of Engineering
	Karur	Tier 1	Chettinad College of Engineering and Technology
	Thanjavur	Tier 1	St.Joseph's College of Engineering and Technology
		Tier 2	University College of Engineering
	Tiruchirappalli	Tier 1	Government College of Engineering
			Jayaram College of Engineering and Technology
			M.A.M College of Engineering
			M.I.E.T. Engineering College
			Oasys Institute of Technology
			University College of Engineering, BIT Campus
North	Tirupattur	Tier 3	Bharathidasan Engineering College
			Podhigai College of Engineering and Technology
			Priyadarshini Engineering College
	Tiruvallur	Tier 1	Aalim Muhammed Salegh College of Engineering
		Tier 2	GRT Institute of Engineering and Technology
			Velammal Institute of Technology
	Villuppuram	Tier 2	Mailam Engineering College
			University College of Engineering
South	Kanyakumari	Tier 1	Amrita College of Engineering and Technology
			DMI Engineering College
			Ponjesly College of Engineering
	Madurai	Tier 1	Anna University Regional Campus
			Latha Mathavan Engineering College
			Mangayarkarasi College of Engineering
			SACS M.A.V.M.M Engineering College
			Solamalai College of Engineering
			Vaigai College of Engineering
	Sivagangai	Tier 1	Alagappa Chettiar Government College of Engineering and Technology
	Theni	Tier 2	Nadar Saraswathi College of Engineering and Technology
	Thoothukudi	Tier 1	Dr.G.U.Pope College of Engineering
			Grace College of Engineering

			Holycross Engineering College
			Jayaraj Annapackiam CSI College of Engineering
			V V College of Engineering
		Tier 2	Unnamalai Institute of Technology
	Tirunelveli	Tier 1	Anna University Regional Campus
			Einstein College of Engineering
			PET Engineering College
			SCAD College of Engineering and Technology
			Thamirabharani Engineering College
West	Coimbatore	Tier 1	Karpagam Institute of Technology
			Kathir College of Engineering
			Kgisl Institute of Technology
	Dharmapuri	Tier 1	Jayalakshmi Institute of Technology
			Shreenivasa Engineering College
			Varuvan Vadivelan Institute of Technology
	Krishnagiri	Tier 1	P.S.V.College of Engineering and Technology
		Tier 3	Government College of Engineering
	Salem	Tier 1	AVS Engineering College
			Dhirajlal Gandhi College of Technology
			Government College of Engineering
			R P Sarathy Institute of Technology
			Salem College of Engineering and Technology
		Tier 2	Bharathiyar Institute of Engineering for Women

3: SAMPLE POLYTECHNIC INSTITUTIONS

Zone	District	Tier	Colleges
East	Ariyalur	Tier III	131 - Government Polytechnic College
			707 - Meenaakshi Ramasamy Polytechnic College
			921 - Modern Polytechnic College
	Karur	Tier I	123 - Government Polytechnic College
			588 - Arulmurugan Polytechnic College
			916 - Konghu Hi-Tek Polytechnic College
	Thanjavur	Tier I	276 - Periyar Centenary Polytechnic College
			571 - Vandayar Polytechnic College
			758 - Annai College Of Polytechnic College
			946 - Arasu Polytechnic College
		Tier II	143 - Government Polytechnic College
			220 - Pattukkottai Polytechnic College
			844 - Manora Polytechnic College
	Tiruchirappalli	Tier I	115 - Government Polytechnic College
			337 - M I E T Polytechnic College
			592 - M A M Polytechnic College
North	Chennai	Tier I	101 - Central Polytechnic College
	Tirupattur	Tier I	130 - Government Polytechnic College
		Tier II	529 - K A R Polytechnic College
			808 - Thirumalai-Madhanur Polytechnic College
			876 - Vaani Polytechnic College
	Tiruvallur	Tier II	148 - Government Polytechnic College
			203 - Murugappa Polytechnic College
			374 - C P C L Polytechnic College
			503 - S A Polytechnic College
			806 - Vethathiri Maharishi Institute Of Technology
	Viluppuram	Tier II	128 - Government Polytechnic College
			313 - Elumalai Polytechnic College
			535 - Rajadesingh Polytechnic College
			812 - Surya Polytechnic College
			943 - Sri Rangapoopathi College Of Engineering
South	Madurai	Tier I	116 - Tamilnadu Polytechnic College
			513 - Latha Mathavan Polytechnic College
		Tier II	345 - Thanapandiyan Polytechnic College
	Sivagangai	Tier I	117 - Alagappa Polytechnic College
		Tier II	769 - St. Micheal Polytechnic College
			861 - St. Xaviers Polytechnic College
	Theni	Tier II	126 - Government Polytechnic College, Theni

			129 - Government Polytechnic College, Andipatti
			860 - Bharath Niketan Polytechnic College
		Tier III	842 - Devangar Polytechnic College
	Thoothukudi	Tier I	118 - Government Polytechnic College
		Tier II	352 - Lakshmiammal Polytechnic College
			355 - St Xaviers Polytechnic College
	Tirunelveli	Tier I	152 - Government Polytechnic College
		Tier II	229 - Sankar Polytechnic College
			580 - F X Polytechnic College
			945 - AKY Polytechnic College
West	Coimbatore	Tier I	111 - Government Polytechnic College
			315 - Sankara Polytechnic College
		Tier II	211 - Sri Ramakrishna Mission Vidyalaya Poly. College
			763 - Thiruvalluvar Polytechnic College
	Dharmapuri	Tier II	122 - Government Polytechnic College, Dharmapuri
			141 - Government Polytechnic College, Kadathur
		Tier III	145 - Government Polytechnic College, Palacode
			595 - Shreenivasa Polytechnic College
			786 - Marutam Nelli Polytechnic College
			790 - Paramveer Polytechnic College
			817 - Shri Krishnaa Polytechnic College
			912 - Sri MoogambigaiPolytehnic College
	Krishnagiri	Tier I	142 - Government Polytechnic College, Kelamangalam
			382 - Adhiyamaan Polytechnic College
		Tier II	139 - Government Polytechnic College, Uthangarai,
			924 - P S V Polytechnic College
	Salem	Tier I	216 - Thiagarajar Polytechnic College
			362 - Rajaji Institute Of Technology
			956 - SRS Polytechnic College
		Tier II	508 - Maruthi Polytechnic College
			546 - The Kavery Polytechnic College
		Tier III	149 - Government Polytechnic College
	The Nilgiris	Tier I	112 - Government Polytechnic College
			231 - N P A Centenary Polytechnic College

4: PERSONAL INFORMATION OF STUDENTS

Category		Engineering (%)	Polytechnic (%)
Gender	Female	53	11
	Male	46	88
	Transperson	1	1
Community	BC	48	41
	MBC	32	35
	Others	4	4
	SC	15	19
	ST	1	1
School of Passing	Government Aided Private School	26	20
	Government School	33	45
	Private School	41	35
Location of the School	Corporation	14	18
	Gram Panchayat	30	32
	Municipality	18	19
	Town Panchayat	38	31
Location of the Residence	Corporation	12	16
	Gram Panchayat	42	39
	Municipality	15	17
	Town Panchayat	31	28
Department of Study	Civil Engineering	5	10
	Computer	47	16

Category		Engineering (%)	Polytechnic (%)
	Science/Information Technology		
	Electrical & Electronics Engineering	12	16
	Electronics and Communication Engineering	28	23
	Mechanical Engineering	8	35
Father's Education Qualification	10th	34	40
	12th	16	13
	Never been to school	22	21
	Others	16	17
	PG	3	3
	UG	9	6
Father's Occupation (or Head of the Family)	Entrepreneur (Business)	8	10
	Government	7	10
	Private sector staff	10	14
	Professional	5	13
	Self Employed (Electrician, Plumber, Autorickshaw, etc.)	52	35
	Unorganised Work	18	18
First Generation Learner	No	37	39
	Yes	63	61

Source: Data Collected from Sample Respondents

5: NATIONAL SKILL DEVELOPMENT INITIATIVES

State	Program Name	Objectives	Focus Areas
Gujarat	Gujarat Skill Development Mission (GSDM) - 2009	Align skills with Gujarat's industrial needs, enhancing employability and entrepreneurship.	Sector-Specific Skills (Textiles, Chemicals, Automotive, IT), Soft Skills (Communication, Leadership), Industrial Hubs (Ankleshwar, Ahmedabad).
Rajasthan	Rajasthan Skill and Livelihoods Development Corporation (RSLDC) - 2010	Reduce unemployment by providing employability skills and promoting sustainable livelihoods.	IT, Retail, Hospitality, Construction, Healthcare, Soft Skills (Communication, Teamwork), Vulnerable Populations (Women, Rural Student).
Maharashtra	Maharashtra State Skill Development Society (MSSDS) -2011	Enhance employability by providing industry-aligned skills and fostering entrepreneurship in industrial hubs.	IT, Manufacturing, Healthcare, Retail, Soft Skills (Communication, Leadership), Urban and Rural Student, Industrial Hubs (Mumbai, Pune).
Kerala	Additional Skill Acquisition Programme (ASAP Kerala) - 2012	Equip students with industry-relevant skills, reducing unemployment and enhancing employability.	IT, Hospitality, Retail, Healthcare, Logistics, Soft Skills (Communication, Teamwork), Disadvantaged Groups, Community Skill Parks, Emerging

State	Program Name	Objectives	Focus Areas
			Tech (EV, AR/VR).
Uttar Pradesh	Uttar Pradesh Skill Development Mission (UPSDM) -2013	Provide employment-oriented skill training, aligning with national Skill India goals to enhance employability.	Electrician, Welder, Computer Operator, Digital Marketing, AI, and Soft Skills
Andhra Pradesh	Andhra Pradesh State Skill Development Corporation (APSSDC) - 2014	Improve employability by providing industry-aligned skill training and bridging the education-industry gap.	Emerging Technologies (AI, Machine Learning, Cybersecurity, Cloud Computing), Soft Skills (Communication, Leadership), Finishing School Programs, Urban and Rural Students.
Telangana	Telangana Academy for Skill and Knowledge (TASK) - 2014	Enhance employability through industry-aligned skill training, focusing on IT and tech sectors.	Coding, Data Analytics, Iot, Soft Skills (Communication, Teamwork), Finishing School Programs, Urban Student, Final-Year Students.
Punjab	Punjab Skill Development Mission (PSDM) - 2014	Skill student to enhance employability, supporting Punjab's economic growth in agriculture, textiles, and IT.	IT, Textiles, Retail, Hospitality, Agriculture, Soft Skills (Communication, Leadership), Women and Rural Student.

State	Program Name	Objectives	Focus Areas
Haryana	Haryana Skill Development Mission (HSDM) - 2015	Increase employability through industry-aligned skill training, supporting Haryana’s industrial growth.	IT, Retail, Logistics, Healthcare, Apparel, Soft Skills, Automotive Sector for Women and Rural Student
Jharkhand	Jharkhand Skill Development Mission Society (JSDMS) - 2015	Skill student to enhance employability, supporting Jharkhand’s industrial and economic development.	IT, Manufacturing, Construction, Retail, Soft Skills (Communication, Problem-Solving) for Mining Sector, Rural and Tribal Student.
Karnataka	Karnataka Skill Development Corporation (KSDC) - 2016	Create a skilled workforce aligned with Karnataka’s tech and industrial demands, enhancing employability.	IT, Electronics, Automotive, Retail, Soft Skills (Communication, Problem-Solving)
Odisha	Odisha Skill Development Authority (OSDA) & World Skill Center - 2016 (World Skill Center: 2020)	Create a globally competitive workforce through advanced skill training, enhancing employability.	Robotics, AI, Automation, Soft Skills (Communication, Leadership) for Urban And Rural Students.

6: INTERNATIONAL SKILL DEVELOPMENT INITIATIVES

Country	Program Name	Objectives	Focus Areas
Germany	Dual Vocational Training System - 1969	Enhance employability by integrating classroom learning with workplace training, aligning skills with industry needs.	Engineering, IT, Automotive, Healthcare, Soft Skills (Communication, Teamwork) to theStudent Aged 16–25 years and Inclusivity Via Subsidies. Relies heavily on Science, Technology, Engineering, and Mathematics (STEM).
France	Alternance (Work-Study) Programs - 1987	Prepare students for employment through combined academic and workplace training.	Engineering, Business, IT, Hospitality, Soft Skills (Communication, Teamwork) for the Students Aged 16–30 with Professional Experience and Inclusivity. Relies heavily on Science, Technology, Engineering, and Mathematics (STEM).
Finland	Vocational Education and Training (VET) and University Work-Integrated Learning - 1990	Align practical training with industry needs to enhance employability and innovation.	IT, Education, Sustainability, Soft Skills for the Students. Relies heavily on Science, Technology, Engineering, and Mathematics (STEM).
Australia	Vocational Education and Training (VET) System - 1992	Provide industry-focused training to enhance employability and economic growth.	Trades (Carpentry, Electrical), IT, Healthcare, Business, Soft Skills (Communication, Problem-Solving), for the Students Aged 15–24 years of the Regional Communities.
Japan	Career Education and Industry-Academia	Prepare students for high-tech industries through	IT, Robotics, Engineering, Healthcare, Soft Skills (Communication, Global Competence) for the

Country	Program Name	Objectives	Focus Areas
	Collaboration Programs - 2000	industry-aligned training and internships.	Students Aged 18–25 years ensuring Global Employability.
Denmark	Vocational Education and Training (VET) and University Internships - 2000s	Enhance employability through practical training aligned with green and tech industries.	IT, Green Technology, Healthcare, Soft Skills (Problem-Solving, Collaboration), for the students ensuring Sustainability and Inclusivity. Relies heavily on Science, Technology, Engineering, and Mathematics (STEM).
Sweden	Yrkeshögskolan (YH) Vocational University Programs - 2009	Provide industry-focused training to enhance employability in high-demand sectors.	IT, healthcare, sustainability, soft skills (collaboration, problem-solving), for the students.
Ireland	Springboard+ and Apprenticeship Programs - 2011	Enhance employability through subsidized training in high-demand sectors.	IT, Data Analytics, Business, Construction, Soft Skills (Communication, Leadership), Digital Skills for the Students Aged 18–30 years.
New Zealand	Vocational Pathways and Tertiary Work-Integrated Learning - 2014	Align skills with industries like agriculture and IT to enhance employability.	IT, Agriculture, Construction, Soft Skills (Communication, Teamwork) for the Students of Regional and Māori Communities.
United Kingdom	Degree Apprenticeships - 2015	Combine university education with workplace training to enhance employability.	Engineering, Digital Technology, Finance, Soft Skills (Leadership, Communication) Students Aged 18–24, STEM, Social Mobility.

Evaluation of Naan Mudhalvan Scheme

The Naan Mudhalvan Scheme, a flagship initiative of the Tamil Nadu Government, empowers youth by providing industry-relevant skills, knowledge, and training to enhance employability and career readiness. It bridges the gap between academic education and industry demands through specialized courses and mentorship, delivered in collaboration with educational institutions, industry partners, and experts. The scheme fosters a skilled, confident, and future-ready generation, aligning with its vision of enabling students to proudly feel, “I am the First.”

Publication by:

State Planning Commission

5th Floor, Ezhilagam, Chepauk,
Chennai - 600 005

www.spc.tn.gov.in

To know more →
www.spc.tn.gov.in

Contact us →
+91 44 28528551

Write to us →
tnspc.tn@nic.in